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GENERAL AND DIFFERENTIAL
DIAGNOSIS
OF
OVARIAN TUMORS,
WITH
SPECIAL REFERENCE TO THE OPERATION
OF
OVARIOTOMY;
AND
OCCASIONAL PATHOLOGICAL AND THERAPEUTICAL CONSIDERATIONS.

BY

WASHINGTON L. ATLEE, M.D.

With Thirty-nine Illustrations.

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TO THE MEMORY
OF
EPHRAIM McDOWELL, M.D.,
OF KENTUCKY,
THE FOUNDER OF OVARIOTOMY IN 1809;
AND TO
JOHN L. ATLEE, Sr., M.D.,
OF PENNSYLVANIA,
MY BROTHER, PRECEPTOR, AND FRIEND,
WHO SINCE 1843 HAS AIDED IN ESTABLISHING THIS AMERICAN OPERATION,
I Dedicate this Volume,
THE FRUITS OF MY EXPERIENCE AND OBSERVATION.

WASHINGTON L. ATLEE, M.D.

PREFACE.

In offering this volume to the members of the medical profession, the author is merely responding to a call long and repeatedly made by numerous friends throughout the United States. He has accomplished the work with many misgivings, under constant interruptions, and amidst a most engrossing and laborious practice. If he has failed in meeting their wants and expectations, he will regret it, as he has labored hard to keep an accurate and daily record of his observations, from which alone he has drawn his materials. The book is a mere transcript of his own clinical experience, recorded at the moment of examination, and comprises the result of observations continuously pursued since the year 1843. Out of the abundant accumulation of matter, he has only selected those facts which most clearly illustrate the points discussed; and, as his own resources are ample, he will not apologize for utilizing them in preference to compiling from the records of other writers. This, he believes, is what the profession of the United States demands.

The reader, in perusing this volume, will notice that, while the text carefully indicates the particular points of diagnosis, the illustrative cases frequently reveal errors committed by the author. He has purposely drawn from his early experience, at a time when he was most liable to err, in order to illustrate step by step the progressive advancement of knowledge in the diagnosis of abdominal tumors, and to show that the observer in this, as in other forms of disease, must necessarily be educated by repeated observations before he can be qualified as an expert. He has written only for those who have not traveled over so large a field as himself, and who, warned by his mistakes, may thus be guarded against the quicksands which he encountered in his earlier professional career. Mistakes teach most valuable lessons, and, when discovered, are not likely to be repeated. Hence, in medicine, they should be recorded for the benefit both of science and of humanity. It is on this account that the author has not shielded himself from his own criticism, and has been free in the acknowledgment of his own faults in diagnosis. Having commenced the study of this subject at a period when not only the literature of the profession was greatly deficient, but when the whole medical world denounced and opposed ovariotomy, he had little else than the book of nature before him, and the consciousness of right to sustain him. He greatly needed just such written clinical instruction as is herein presented to the profession. Had his pathway been illuminated by a similar beacon, he is satisfied that humanity would have been the gainer, and that his own record would have been better. Matured as his judgment has been by many years of experience and of observation, the repetition of most of the errors is now impossible, while a retrospective view satisfies him that he has left undone many things that ought to have been done, and has done many things that ought to have been left undone. Perhaps he can make amends for these sins of omission and commission in the past in no better way than by guarding his professional brethren from similar errors by presenting to them this volume on Diagnosis.

Ovariotomy having now fairly passed through its probationary career, and taken a position among the established operations of surgery, a *Treatise on the General and Differential Diagnosis of Abdominal Tumors* may not be considered untimely. It properly should precede the consideration of the surgical treatment of such tumors. For this reason, and to meet the demands of the profession, the author issues it as volume first, intending to follow it, as promptly as his engagements will permit, with a second volume, comprising cases and their management.

While an occasional reference is made to pathology and therapeutics in discussing differential diagnosis, a chapter [XXIII.] is specially appropriated to the pathology of the principal varieties of cysts of the ovary. This portion of the work was assigned to

J. Ewing Mears, M.D., of Philadelphia. For the last three years he has assisted me in many of my operations, and has examined a number of the tumors and their contents. These pathological investigations are incorporated in this volume, and may be viewed as an original contribution in accord with the spirit of the work.

No member of the profession in Philadelphia has labored more assiduously with the author than his own son-in-law, Thomas M. Drysdale, M.D. For many years the examination of the fluids of dropsy has been intrusted to him, and several hundred specimens have undergone careful investigation. Rarely has he failed in identifying the fluid of an ovarian cyst, or in distinguishing it from every other kind of dropsical fluid. In a few instances he has found a granular cell, resembling the characteristic ovarian cell, in fluid not ovarian; but in these cases the cells were very few in number, and were not affected in the same manner by tests. In several cases of great difficulty of diagnosis, the author was enabled to arrive at a satisfactory result *only* by the examination of the fluid. Instances of this kind are noted in the following pages. The diagnostic value of dropsical fluids is so great in the estimation of the author that, in doubtful cases, he is a strong advocate for paracentesis simply as a means of diagnosis. A chapter [XXIV.] therefore, containing the results of Dr. Drysdale's investigations, is also embraced in this volume, and will be hailed by the profession as a valuable and original scientific paper. His observations comprise the physical, chemical, and microscopical characteristics of dropsical fluids, principally ovarian, and are entirely practical in character.

For the purposes of better illustrating cases of abdominal tumors, and explaining points in diagnosis, the author has adopted both a side view, Figure 1, and a front view, Figure 2, of the female form, drawn accurately in outline,—the usual anatomical divisions of the abdomen being also represented.

Fig. 1.

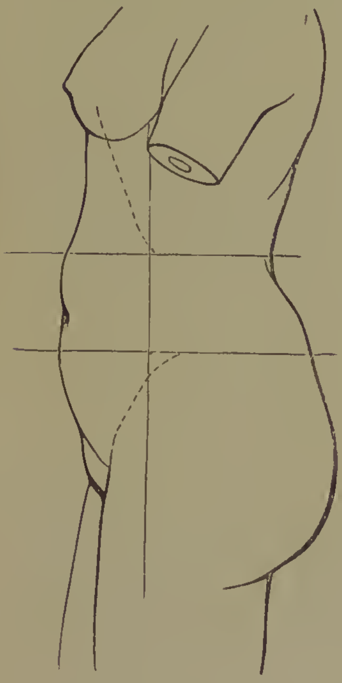
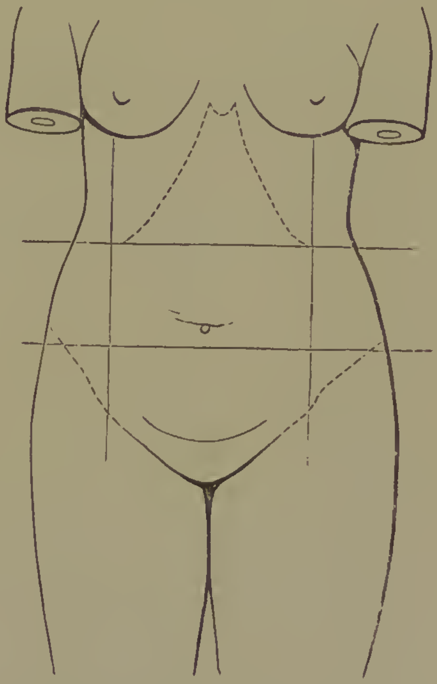


Fig. 2.



I may remark in conclusion that this volume, in manuscript, was submitted to Dr. John L. Atlee, Senr., of

Lancaster, Pennsylvania, and to Dr. S. Fitch, of Portland, Maine, for their advice in regard to the propriety of its publication. Encouraged by their favorable opinion, I have ventured to present it to the medical public.

Acknowledgments are due to both these gentlemen, and to Doctors Drysdale and Mears, for valuable assistance in revising the pages of the volume before putting it to press, and especially to the last-named gentleman for his assistance in correcting proof.

WASHINGTON L. ATLEE,
1408 Arch Street.

PHILADELPHIA, August, 1872.

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ERRATA.

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" 40, first line, *for* pistaxis *read* epistaxis.
" 65, line 8 from bottom, *for* or *read* on.
" 78, line 18 from bottom, *for* of *read* having.
" 101, first line, *for* S *read* F.
" 139, 141, 143, head lines, *for* hepatic cysts *read* cysts of the kidney.
" 145, lines 6 and 7 from top, *for* its *read* their.
" 297, line 18 from bottom, *for* become *read* became.
' 376, line 13 from bottom, *for* the tumor *read* it.

DIAGNOSIS

OF

OVARIAN TUMORS.

SECTION I.

CHAPTER I.

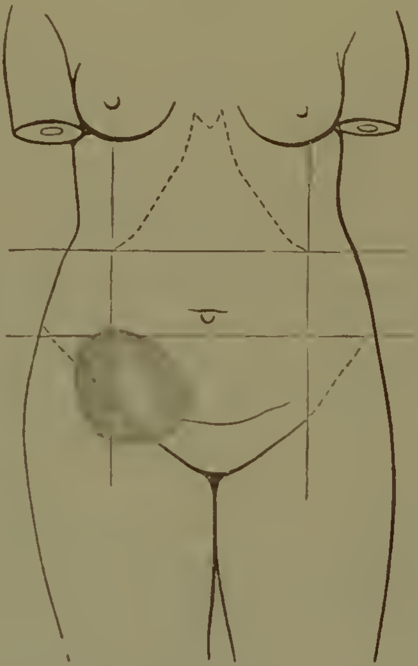
GENERAL DIAGNOSIS OF OVARIAN TUMORS.

A PATIENT seldom has any direct evidence of the existence of an ovarian tumor until she can feel it above the brim of the pelvis, or until some enlargement of the abdomen has occurred; and as she does not usually seek the opinion of a surgeon before one or the other takes place, I shall confine my remarks on diagnosis, to tumors after they have invaded the cavity of the abdomen. This is especially appropriate, as the subject will be discussed in reference to the question of ovariotomy,—an operation unlikely to be performed before the tumor has been elevated above the brim of the pelvis.

Early period of the tumor.—When consulted soon after the tumor has left the pelvis, the surgeon usually finds it varying in size from a hen's egg to that of a goose's egg, similar in shape, and occupying a position on one or the other side of the mesial line. This tumor is best examined while the patient is on her back, and if the walls of the abdomen be thin, its outline may be seen. To the touch it is found to be circumscribed, more or less elastic, generally movable, seldom sensitive, and more or less prominent. The general health as yet may not have become affected. The tumor, however, at this early stage, is not always movable and insensitive, as the following case will show:

Case I.—*Simple ovarian cyst, adherent to iliac fossa,—easy of diagnosis.* Miss M. A. W., aged about thirty years, was brought to the city by Dr. Hendry, of Gloucester, New Jersey, December 4th, 1853. I examined her the same day. The right iliac fossa, as represented in Fig. 3, was occupied by a tumor four or five inches in diameter, smooth, elastic, semi-fluctuating, sore to pressure, and perfectly immovable. The walls of the abdomen could be moved over the surface of the tumor and lifted from it, there being no adhesions between them. Some time previously the patient had suffered extreme pain in the right inguinal region, and evidently had passed through a serious attack of inflammation, which had resulted in strong adhesions between the tumor and the iliac fossa. Next day, in the presence of Drs. J. L. Atlee, Sr., of Lancaster, Hendry, Dorr, and Drysdale, I introduced a trocar, and drew away about twelve ounces of orange-colored fluid, which was coagulated by heat, and in other respects indicated the existence of an ovarian cyst.

Fig. 3.



Position of the tumor.—As the tumor increases in bulk, and rises above the fundus of the uterus, it may take a more central position, so that the patient herself—having yet felt no inconvenience from its presence—may not know of its existence until it has occupied the middle of the hypogastric region, and then her attention is first attracted to it by her size. Therefore, in tracing out the history of the progress of a tumor, it will be found that many patients will describe it as having made its appearance first in the central lower portion of the abdomen; others, again, will assure you that the enlargement of the abdomen was uniform, having overlooked the earlier period of the tumor, and date its origin from the time their attention was first called to it; for it is not unusual for patients to be so little troubled by the gradual growth of the tumor, that the increase in size is first noticed by their friends. In either case, it would be wrong to infer that it was not an ovarian tumor because its origin had not been discovered in the side. Still, even after it has attained a considerable size, it often retains a lateral position, the linea alba being, by no means, the dividing line.

Mobility diminishes as size increases; fluctuation; percussion sound.—As the tumor encroaches upon the abdominal cavity, crowding the viscera, it becomes less and less movable. It is still circumscribed both to sight and touch, elastic and prominent. If it be a unilocular cyst, there will be distinct fluctuation, the wave not extending beyond the borders of the tumor itself. If it be a multilocular cyst, with two or more large cavities, the fluctuation will be more or less indistinct, and masses or ridges, varying in size and consistence, may be felt over the walls of the tumor. A multilocular cyst, with numerous small cavities, will yield very imperfect fluctuation, which requires great nicety of touch to discover. Indeed, fluctuation may be entirely absent. In either form of cyst, percussion will produce the same flat or dull sound over the circumscribed tumor, and a resonant sound around its borders. Similar conditions may exist under other circumstances, even in the absence of ovarian tumors, as will be shown under the head of Differential Diagnosis. And even when ovarian tumors are present, many of the foregoing conditions may not only be absent, but diametrically opposite, as shown by the following case:

Case II.—*Tumors of both ovaries, discovered by drawing off ascitic fluid.* Miss C. R., aged twenty-five years, was visited by myself and brother in December, 1842. There was considerable abdominal enlargement, but no evidence either to sight or touch of a circumscribed tumor. Fluctuation was not confined to the central and most prominent points of the abdomen, but extended to the extreme periphery of the parietes. In the supine position, percussion over the umbilical region returned a resonant sound, while in both lumbar regions the sound was dull. A trocar was introduced, twenty-two pints of ascitic fluid were drawn off, and, after the collapse of the abdominal walls took place, two tumors—one belonging to each ovary—were discovered, although their existence was not previously suspected.

Freedom from constitutional symptoms.—Up to this point of development of an ovarian tumor—when as yet it has not reached a large size—the functions of life are usually found in good condition, general constitutional symptoms are absent, and the health of the patient is not at all or but slightly impaired. This almost entire freedom from symptomatic derangement possesses great diagnostic value in simple cystic disease of the ovary. Where a different state of things exists, at this early period, there are good reasons for suspecting the presence of malignant disease, or the existence of a more solid pelvic tumor.

It is not unusual, however, for a cyst of a simple character to go on to its extreme development without interfering with the general health, excepting so far as by its pressure it may obstruct more or less the functions of adjoining viscera, causing impeded respiration, diminishing the renal secretion, and producing dyspeptic symptoms. Whenever the enlargement is great, with slight impairment of the general health, it may, as a general rule, be safely inferred that the disease, if accompanied by fluctuation, is some form of cystic dropsy.

But it is more commonly the case that an ovarian tumor, in attaining such dimensions as to displace the neighboring viscera and compress them into narrow limits, will, no matter how simple and benign its character, impair the normal functions, producing, from physical causes alone, the most distressing symptoms. Those most prominent are: aggravated indigestion; flatulency; intestinal cramps; constipation or diarrhœa; hemorrhoids; malposition and functional derangement of the pelvic organs; disturbed and diminished action of the kidneys; anasarca of one or both lower limbs, of the pudendum, and of the lower part of the abdomen,—particularly if the pelvic portion of the tumor be solid or adherent; dyspnœa, so that frequently the upright position must be constantly maintained; great emaciation; and finally, fatal exhaustion.

Emaciation. — The emaciation which accompanies extreme development of ovarian tumors is most striking about the face, neck, shoulders, and arms. When there is no effusion into the areolar tissue in any part of the body, the attenuation is universal, and the osseous angles may be seen jutting out everywhere. In cases of an acute character, accompanied by more or less inflammatory action, emaciation is much more rapid, and has no relation to the size of the tumor. The following case illustrates this fact:

CASE III.—*Pyogenic ovarian cyst, surrounded by a mass of plastic lymph, producing rapid and extreme emaciation.* July 27th, 1870, I operated on Mrs. W. H. B., aged twenty years, at Enon, Alabama. She was married at the age of eighteen, and was delivered of a child nine months before I saw her. Four weeks after parturition she was taken with severe pain in the right inguinal region, accompanied by considerable febrile excitement. Seven weeks afterwards an immovable tumor appeared in the same place, and rapidly increased, until she became as large as she had been at the full period of utero-gestation. Her suffering had been intense and incessant. She had been tapped four times,—the last time two weeks before,—removing four quarts of purulent fluid each time. Before this acute attack, her weight was one hundred and sixty pounds.

On examination, I found the abdomen, although not greatly enlarged, to be extremely tense, elastic, and fluctuating. The cyst was immovable, and was diagnosed to be adherent at every point. Emaciation was extreme. It seemed as if all the muscular and adipose tissue had been absorbed; and her supposed weight did not exceed sixty pounds. The tongue was very red, the pulse very small, slightly tense, and quick, and one hundred and twenty to the minute.

Drs. G. Caldwell, N. P. Banks, C. H. Jernigan, G. W. Crymes, all of Enon, and F. A. Sandford, of Columbus, Georgia, assisted in the operation. On making a section of the abdominal wall, its structure was found to be entirely altered by inflammatory action, and the line of demarkation between it and the cyst consisted of a layer of coagulable lymph, which sealed them intimately together. The cyst, having been detached from the inner face of the abdominal wall, was emptied by the trocar of several pints of pure pus. It was now found to be adherent to everything it touched—intestines, uterus, and bladder—by a thick layer of plastic lymph. It was enucleated from this bed by shelling off the layer of lymph, which entirely invested and shielded the above-named viscera. After removing the tumor from its bed, it was still attached to the uterus by a membranous pedicle. On examination, this pedicle was found to be non-vascular, and I tore it asunder, applying neither clamp nor ligature to secure it.

After the removal of the tumor, the cavity of the abdomen was examined, and the only thing seen was a small portion of healthy intestine,—the wall of lymph shutting out from view the uterus, bladder, the other ovary, and the large mass of intestines.

On placing the patient in bed, on her back, the spinous processes of the vertebræ were rendered so prominent by the extreme emaciation that rolls of cotton had to be placed on each side to balance and protect her.

The above case not only demonstrates how rapidly a small tumor—fifteen pounds in weight—may emaciate a patient and destroy her vital powers, but it is particularly valuable in establishing the propriety of the operation of ovariotomy. Two weeks before the operation, paracentesis was followed by nearly fatal results, and the symptoms were so grave that her physicians assured me that, in their opinion, she must sink under another tapping. Indeed, death seemed to be impending, and was daily expected. Ovariotomy was offered only as a forlorn-hope, and happily was successful.

Expression of countenance.—In cases of large ovarian tumors the countenance is peculiarly expressive, anxious, and careworn, the features being greatly attenuated, and the complexion pale. This peculiar expression of the countenance, although a prominent symptom, is not pathognomonic of ovarian tumor, as it may exist in other cases of extreme abdominal enlargement depending on other causes.

Catamenia.—As bearing upon diagnosis, the catamenia are of little value. In the majority of cases they continue with more or less regularity. Even when both ovaries are diseased, the menses may appear without apparent derangement, and this may be accounted for on the supposition that in the diseased mass there may still exist Graafian vesicles in a normal condition. The removal of one ovary does not necessarily prevent ovulation, nor impregnation, provided the remaining ovary, though diseased, contains Graafian vesicles in a healthy condition. And what is more remarkable, as a physiological fact, the removal of both ovaries is sometimes followed by a regular red discharge, even for years, and until it is arrested at the usual climacteric period. Perhaps this may be the result of a habit, or habitual molimen, just as a eunuch, whose testicles have not been removed until puberty has been established, may have both erection and the ejection of a fluid. In illustration of these curious facts I need not apologize for the introduction of the following interesting and unique cases:

CASE IV.—*Both ovaries diseased and removed; menstruation regular both before and after the operation.* April 17th, 1854, I operated on Mrs. J. C., of Baltimore, in the presence of Drs. Monkur, Morris, Bull, all of Baltimore, and Drysdale, Cox, Jackson, and Fleming, of Philadelphia, removing both ovaries. She was thirty-five years old, had first menstruated at the age of twelve years, was married at the age of eighteen, and had six children, the youngest being four years old. After the birth of the last child, her abdomen remained large, and continued to increase until the 17th of March, 1852, when the enlargement suddenly disappeared, followed by great soreness of the abdomen. No doubt the cyst had ruptured, and produced peritonitis. Eight weeks after the swelling began to return, and continued increasing, until she presented herself to me. She nursed all her children, and while nursing she menstruated regularly, commencing at the expiration of five months after parturition. She continued to be very regular after the birth of her last child, and up to the period of the operation. The last period occurred on the 20th of March preceding. After the operation, the same evening, the menses appeared, and continued the usual number of days. For several years Mrs. C. wrote to me on every anniversary of the day of the operation, always assuring me that menstruation was perfectly regular. Being on a visit to Baltimore in December, 1866, I saw her, and she informed me that she had menstruated as regularly as ever up to May, 1864, when the menses ceased for one year, and again returned in May, 1865, for the last time.

Case V.—*Both ovaries diseased and removed; menstruation regular before the operation; regular monthly molimen, with white discharge, after the operation.* April 25th, 1855, I removed both ovaries from Miss K. V., of Baltimore, in the presence of Drs. Hintze, Morris, Chatard, O'Donnell, Wilkins, Landis, and Cockrill, of Baltimore, and Drysdale and Jackson, of Philadelphia. She was nineteen years old; she first menstruated before her thirteenth year of age, and was regular afterwards. The enlargement commenced eighteen months before. In May, 1854, she was suddenly seized with the most agonizing pain over the whole abdomen, as if something had been rent asunder, and, in the course of one week, the enlargement had disappeared, excepting a little fullness in the left side. In September following, the abdomen began to increase again, and rapidly returned to its former size. She had been tapped twice. Six months after the operation I saw the patient in Baltimore, where she had just issued her wedding cards. She had no red menstruation since the operation, but she experienced the usual sensations in her head and back at regular monthly intervals, accompanied with white discharge at those times. She married, made a visit to Europe, and after her return I learned through her mother that the monthly discharge continued, and that the sexual feelings were normal.

Case VI.—*Left ovary first removed; seven years after the right ovary removed; menstruation regular both before and after each operation.* October 16th, 1857, I extirpated the left ovary of Mrs. J. C., assisted by Drs. Drysdale, Fleming, and Chamberlain, of Philadelphia; Hoffman, of Reading; Wythes and Brown, of Port Carbon; Yarrington, of Port Clinton, and Berlachy and Halberstadt, of Pottsville. She was twenty-seven years old, had been married four years, but had not conceived. After slight irregularity in menstruation she had first noticed the tumor in May, 1857. The left ovary was removed. The right ovary was examined and pronounced healthy. July 8th, 1861, Mrs. C. called to see me, having an ovarian tumor in the right side, which had existed for about six weeks, and was rapidly enlarging. Menstruation was regular. October 16th, 1864, she called again, and reported herself perfectly regular ever since. November 11th, 1864, I removed the right ovary in the presence of Drs. Smith, Leonard, De Young, Richardson, Ziegenfuss, and Thompson. The left side of the uterus was examined at the time, and found to be perfectly truncated, being shorn of every kind of appendage. Dr. A. C. Smith, of Mauch Chunk, under date of December 8th, 1870, wrote as follows:

"Dear Sir,—I called upon Mrs. C. to-day, according to your request of the 4th. She informed me that from the time of the first operation up to the second she menstruated regularly. Since the last operation she has been regular, and is to-day. *In fact, she is at this time menstruating.* When I say regular, I mean, of course, *that in its fullest sense.* She is regular as to *time*, *quantity*, and *quality*, etc., and free from any abnormal symptoms."

CASE VII.—*Both ovaries removed,—one in* 1846, *by Dr. Charles Clay, of Manchester, England; the other by myself, in* 1861; *menstruation always regular.* October 26th, 1861, I removed the right and only ovary from Mrs. T. R., in the presence of Drs. Drysdale, Burpee, Packard, Goodell, Cheeseman, Buck, and McMurray. She was forty years old, first menstruated at the age of fourteen, and had been perfectly regular up to the above date. Before her marriage, October 5th, 1846, Dr. Clay extirpated one of the ovaries, weighing forty-eight pounds. She afterwards emigrated to this country, and married in 1847, and upon the birth of her fourth child, in July, 1857, the other ovary was found to be enlarged. In December following she was tapped, and again in December, 1858. August, 1859, she conceived, and in October, 1859, she was tapped the third time; in January, 1860, again, and the fifth time in March following. On the 3d of April, 1860, a child was born at full period, breech presentation. April 10th she was tapped again, and up to August, 1861, she was tapped eleven times. The first operation by Dr. Clay, according to his account, was unusually formidable and hazardous, and the second, performed by myself, was equally trying and unpromising.

During the whole of the above period, notwithstanding one ovary had been extirpated, and the other ovary was extensively diseased, menstruation not only returned regularly, but conception took place, gestation was matured in spite of repeated tappings, and a living, healthy child born! And yet more, menstruation continued to recur regularly afterwards, as she writes from Wisconsin, October 24th, 1863, "*Courses all right every month!*"

In reference to this remarkable case, Dr. Clay, in the fifth volume of the "Transactions of the Obstetrical Society of

London," says: "In 1861, sixteen years after the first operation, the opposite ovary became diseased, and increased to a very large size. She now prepared to return to England, to place herself under my care. In the mean time I wrote, and requested her to consult Mr. Atlee, the principal ovariotomist of America, which she did, and was operated on for the second time, and, to my astonishment, recovered. A short time ago, this patient was reported to me as quite restored to health, and capable of attending to the duties of her household. A case like this, in my opinion, speaks volumes in favor of the operation."

Case VIII.—*One ovary removed; the other becomes diseased; menstruation always regular, and conception takes place.* June 28th, 1867, I removed the right ovary from Mrs. T. C., aged twenty-nine years. She first menstruated at the age of fourteen years, was married at the age of twenty-two years, and had three children, the youngest nine months old, and weaned two weeks before the operation. When about six or seven months pregnant with the last child, she noticed the tumor, which increased rapidly up to the time of parturition and afterward. Five weeks before the operation, fifty-five pints of fluid were removed by tapping. Menstruation was regular after the operation. October 31st, 1868, a healthy child, the fourth one, was born at full period. When half gone with this child, she noticed a tumor in the left side, which rapidly increased. She nursed her child for two years; the menses returned in eighteen months after parturition, and continued to be regular until December 6th, 1870, when they were suspended, and she considered herself pregnant. On examination, I found that her impression was correct, and that an ovarian tumor was poised on a centrally located pregnant uterus. April 5th, 1871, I tapped her of eleven pints of fluid, which relaxed the abdominal walls so much that I could easily trace out the *impregnated* uterus. August 29th, 1871, she was delivered of a son. (See the same case, No. CXXXVI.)

As bearing on the theory of menstruation, these cases have great physiological importance. They cannot properly be classed with those cases of "uterine pistaxis" or "metrostaxis" (of Mr. T. Spencer Wells) which occur so frequently a few hours or days after an operation.

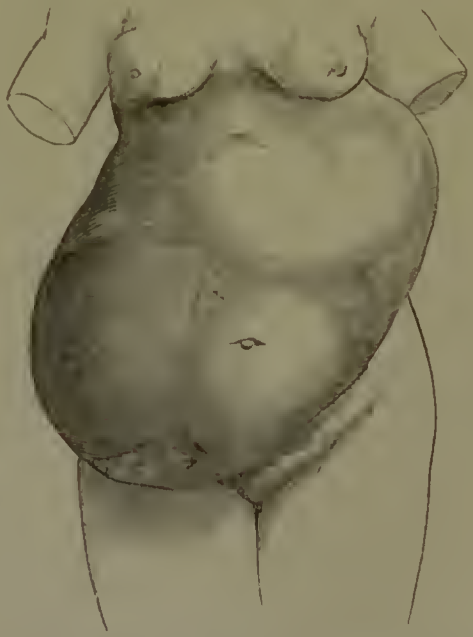
Position of the tumor in relation to the viscera.—In considering these general conditions, an important point in reference to diagnosis is the relative position of the tumor to the abdominal viscera. After the tumor has risen from the pelvis it usually takes a position in front of the intestines, and, as it becomes more and more developed, crowds them backward, upward, and to the sides. This may be considered the case always when their growth is unaccompanied by inflammatory action. In exceptional cases, however, the intestinal canal may be found traversing the front of an ovarian cyst, or dipping down between the lobes of a multilocular tumor. In such cases the inference is fair that it occupies this position in consequence of inflammatory deposits having fastened it to the tumor.

Percussion and palpation.—Percussion and palpation become very important aids in detecting the existence and location of ovarian and other abdominal tumors. A patient should be examined with the abdomen uncovered, and first in the sitting posture. The whole surface of the abdomen should then be explored by palpation, varying the pressure. By this means we are able, through the sense of touch alone, to detect the presence of peritoneal fluid between the surface of the tumor and the walls of the abdomen; to decide upon the density of a tumor; to detect the existence of smaller bodies in the walls of a large cyst, and frequently to trace the outlines of several cysts, by the sulci which divide a polycystic mass. During this examination, the eye of the surgeon should follow all the motions of the hand,—the general contour of the abdomen, as well as the form of the several parts, being worthy of the closest observation. Different inferences would be drawn according to the impression imparted to the hand, and the shape of the abdomen. The patient being still in a sitting posture, percussion should next be made by placing the palmar surface of the finger of one hand upon the abdomen and striking it with the ends of the fingers of the other hand, and noticing closely the sounds elicited. It is well known that when percussion is made over any part containing air, there will be a reverberation of sound, which is denominated *resonance*, while over a liquid or a solid a *flat or dull* sound will be returned. Therefore, an ovarian or other solid tumor, located anterior to the viscera, must give off a *dull* percussion sound over the anterior part of the abdomen, and indeed over the whole space occupied by it; whereas the intestines, which always contain more or less air, must return a *resonant* percussion sound, and are usually thus traced, occupying the lumbar, hypochondriac, and epigastric regions, being crowded beyond the borders of the tumor. A patient, therefore, having an ovarian tumor filling the abdominal cavity and crowding closely upon the viscera, will, almost universally, be free from a resonant percussion sound over every part of the abdomen except in the regions above stated, and not unfrequently this sound is absent in one or more of these localities.

Fluctuation.—There is another form of percussion, having no regard to sound, but equally important, made by placing the palm of one hand upon different parts of the abdomen, and striking other points with the fingers of the other, that must next be employed. When a body of fluid at rest, and confined within certain limits, is acted upon by a sudden force, a wave is transmitted throughout all the particles, and the impulse can be felt at every point. Therefore, in percussing an ovarian cyst on one side of the abdomen, a wave is set in motion, which can be felt striking against the hand applied to the other side. This is called *fluctuation*. Now, this fluctuation, as a general rule, can be recognized only in the circumscribed tumor, and does not extend to the regions beyond. It varies in degree, according to the consistency of the fluid, the density of the walls of the cyst, the thickness of the walls of the abdomen, and the simple or multiple character of the tumor. If the fluid be thin, and the cyst unilocular, the sense of fluctuation will be much more evident than if the fluid be viscid, or the cyst be multilocular, or its walls be covered with semi-solid growths. The entire absence of fluctuation indicates a solid, semi-solid, or highly polycystic tumor.

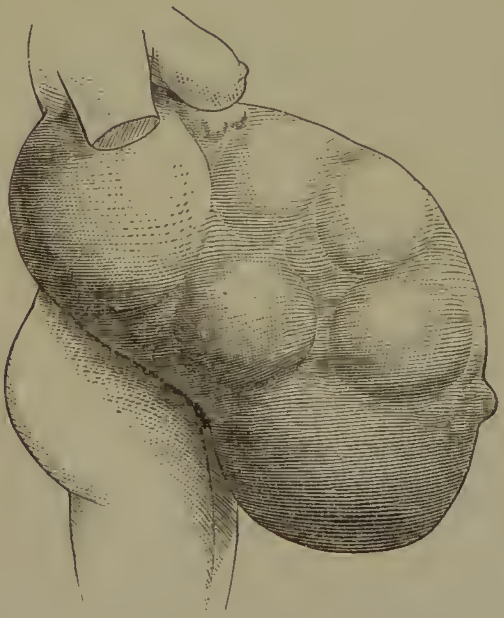
Form of abdomen.—In connection with these methods of diagnosis, we must not neglect to notice the exact form of the abdomen. It may be perfectly uniform in shape, but generally there is more or less departure from its usual symmetry. When, in ovarian tumors, the form of the abdomen is symmetrical, it may be inferred that the cyst is unilocular, although even a monocyst may vary in the thickness of its walls in different parts, and the least resisting portions may expand to a greater degree than the more dense parts, and thus cause inequality in the shape of the abdomen. A bilocular tumor is sometimes as uniform in shape as a monocyst, but its fluctuation is modified by the intervention of the septum. In multilocular tumors, and those containing solid deposits in their walls, elevations and depressions, varying in size, shape, and consistence, may be noticed over the whole extent of the abdomen, or over sections of it, and not unfrequently, in

Fig. 4.



such a case, the longest diameter of the tumor will extend diagonally from the hypochondrium of one side to the inguinal region of the other, and the shortest diameter at right angles through the opposite regions, as in Fig. 4. In tumors of extraordinary size the xiphoid cartilage will be pushed out to form an angle of 45°, or even 90°, the cartilages of the ribs forced apart and elevated, the diaphragm and thoracic viscera crowded upward, the lumbar regions protruded beyond the level of the vertebræ, and the lower portion of the abdomen will hang down so as to rest against the thighs, or, in a sitting posture, drop between them. The umbilicus may protrude, as in hernia, or be nearly obliterated, the veins enlarged and filled with dark blood, and sometimes a pulsatile vibration will be noticed throughout the mass. A tape measure extended from the sternum to the pubes, along the linea alba, will be from one to four inches shorter than one between the two superior spinous processes of the ilium over the front of the abdomen. (See Fig. 5.)

Fig. 5.



Position of patient during examination.—In making these investigations by percussion, palpation, and the eye, the patient has been considered to be in an upright or sitting posture, and it is of the highest importance, particularly in regard to differential diagnosis, to keep clearly in mind all the evidence thus procured, in order that it may be compared with that to be next obtained by changing the position of the patient.

The patient now having taken the supine position, must be subjected to precisely the same processes. The evidence gained by examination in the recumbent posture is generally much more satisfactory than that obtained in any other position, because the walls of the abdomen are less tensely drawn over the surface of the tumor. This applies more particularly to palpation, and, in many cases, to fluctuation, and also to sight.

The same kind of examination should next be pursued while the patient is on her right, and afterwards on her left side; and having thus carefully gone over the whole ground, the results should be collated and compared. If it be found that in every position of the body—whether standing or sitting, lying on the back, or on one side or the other—the same region remains dull, that the points of resonance never vary, that, in fact, the percussion sound is constantly the same in the same place, that the sense of fluctuation is stationary, and that the form does not materially alter, the existence of an ovarian tumor may be reasonably inferred.

Which ovary diseased.—In order to distinguish whether the right or left ovary is diseased, the percussion sound is directed to be taken on each side of the lumbar vertebræ. In doing this, if one side be found resonant and the other dull, it is inferred that the enlarged ovary corresponds with the dull side. But this test is not reliable, as it often happens that both lumbar regions are resonant, in consequence of the ascending and descending colon being in place and containing flatus. The ovary also, by being tilted over, sometimes invades the side opposite to that from which it originated, and in this way may mislead the observer. If, however, the history of the case shows that in the early development of the tumor it had appeared in one or the other groin, or that severe pain, in either side, had accompanied its origin, or that one limb had swelled and the other had not, the indications are much more valuable,—the side on which the early difficulty existed will determine which ovary is affected. A recent case will illustrate these facts:

Case IX.—*The physical signs and early history contradicting each other.* March 27th, 1871, I extirpated the *right* ovary from Mrs. A. H. G., aged sixty-one years, in the presence of Drs. Mears, Burpee, Keen, Drysdale, W. Lemuel Atlee, Hoffman, Emanuel, Cauffman, and Houston. About three years before she had an attack of severe pain in the *right groin and hip.* One year after her friends noticed an enlargement, of which she was not aware. It extended uniformly over the whole lower portion of the abdomen. Afterwards she had returns of pain in the right inguinal region. At the above date she was as large as a woman at the full period of utero-gestation. *The tumor was most developed towards the left side.* The percussion sound was *dull over the left lumbar* region and elsewhere, except in the epigastric, right hypochondriac, and *right lumbar* regions, where it was *resonant.*

In stating my diagnosis in the above case to the gentlemen assembled, I called their attention particularly to this contradiction between the history of the tumor and the sounds elicited by percussion. It happily illustrated the opinion expressed in the text,—that the early symptoms, when well marked, are most reliable in deciding this question. Should the history and percussion sound correspond, the testimony would, of course, be strongest.

The decision, however, of this question may be regarded as a refinement in diagnosis of no practical value in respect to ovariotomy, as the operation must be decided upon without reference to the point as to whether the right or the left ovary is to be extirpated.

Position of the uterus.—While the patient is still in bed, a vaginal, and sometimes a rectal, examination should be made. The position of the uterus varies very much in different cases, and at different periods in the same case. It may occupy a position in the axis and centre of the pelvis, and may be as pliable and movable as in perfect health,—the enlarged ovary having escaped from the pelvis into the abdominal cavity; or the ovary itself, while undergoing enlargement, may invade the cavity of the pelvis, and so occupy it as to crowd the uterus out of and above it, so that the os uteri may be nearly or quite beyond the reach of the finger. Again, the uterus may be dragged up, or tilted up out of the pelvic cavity by the tumor; or, through these influences, it may be found on either side, or displaced forward or backward within the pelvis. It may also be crowded downward against the perineum, or entirely extruded through the vulvar orifice. So that there is no general rule as regards the position of the uterus in ovarian tumors.

Prolapsus of the bladder or vagina.—Prolapsus of the bladder or of the vagina is occasionally found complicating these growths. The former may be identified by means of the sound or catheter. The latter may be distinguished from hernial protrusions by the absence of the resonant percussion sound, and by being translucent.

Frequently the lower portion of the tumor, though not occupying the pelvis, can be reached by the index-finger through the vaginal vault, or it may be felt through the vaginal or rectal walls dipping into the cavity, and fluctuation at these points may sometimes be discovered on percussing the parietes of the abdomen.

These examinations, made for the purpose of determining the position of the uterus and bladder, are rarely accompanied by pain, and the os, cervix, and body of the uterus, when within reach, are generally recognized as being in a healthy condition.

The uterine sound.—In the large majority of cases the uterine sound will enter the normal distance of two inches and a half into the cavity of the uterus. It will seldom be less, and occasionally it will pass from one-fourth of an inch to two or three inches farther. The uterus, when alone in the pelvis, can usually be played about by the sound, being very little or not at all restrained by its connection with the tumor. When the sound is in the uterus, and is held by the surgeon, and the tumor is moved about by an assistant, the former, when the pelvis is free, is very little or not at all influenced by such motion. The isolation and mobility of the uterus are very important points with regard to the question of an operation. When the uterus is displaced by the tumor, either elevated above the brim of the pelvis, or jammed within its cavity, its mobility is more or less impaired, and the sound will equally indicate its fixedness and length, which are also important in calculating the results of an operation.

Tapping.—One of the most important means of diagnosis in ovarian tumors is tapping. It generally affords us undoubted information of the presence or absence of ovarian disease, aids us in detecting adhesions, and in deciding upon the true character of the tumor. As a means of diagnosis, however, tapping should not be performed in the early period of the disease, unless it be done in reference to the propriety of ovariotomy, yet it would not be improper to tap at any period, with a view of relieving urgent symptoms not amenable to ordinary medication. On the other hand, ovariotomy ought never to be attempted by the inexperienced surgeon, should he not be able to avail himself of enlightened counsel, without previously resorting to tapping as a means of diagnosis. Several cases of ovariotomy have been attempted where "*no tumor*" was found. Had these proceedings been premised by tapping, these patients might have been saved a hazardous operation, their surgeons extreme mortification, and the charge of "difficulty of diagnosis,"—as an argument against ovariotomy,—to this extent at least, could not have been maintained. The only two operations in this city where "no tumor" was found, were performed by two very respectable surgeons,—one of them quite distinguished,—and in neither case, as I have been informed, did they avail themselves, in their very limited experience in the treatment of ovarian diseases, of this indispensable means of diagnosis.

A large trocar for tapping.—For tapping an ovarian cyst a very large trocar should be employed. Even with the largest-sized canula it is sometimes difficult, at other times impossible, to draw away the fluid, in consequence of its viscid character. A lancet should never be employed for this purpose; for, however safe it may be in ascites, it may prove a highly dangerous instrument in cystic dropsy. Should no adhesions exist between the wall of the cyst and that of the abdomen at the point perforated by the lancet, the openings through both, although in line at first, would, as the cyst was emptied, more and more lose their correspondence, and finally the contents of the cyst would escape into the cavity of the peritoneum and kindle up fatal inflammation. This mode of tapping in cystic dropsy is, therefore, highly improper and censurable, and no doubt has been one of the causes of death in this otherwise safe operation.

Position of the patient in tapping.—In paracentesis abdominis the position of the patient during the operation is of much more importance than is generally supposed. In this country the almost universal plan has been to place the patient in a sitting posture. And this has been the case, according to accounts, in other countries. More recently, however, English surgeons have called the attention of the profession to the advantage of tapping while the patient occupies a recumbent position. My experience in this operation is unusually large, extending over a period of forty years, during which time I have invariably discarded the sitting posture, and placed the patient lengthwise in bed, on her back, with the head and shoulders somewhat elevated. In this way the most feeble patient may be tapped without any loss of strength. Indeed, if the pulse be compared after, with the pulse before the operation, it will almost invariably be found to have improved in volume and force. It is easy to understand how fatal results may follow tapping in an upright position in a weak person. The fluid having been withdrawn from the abdomen, the support to the diaphragm, thoracic and abdominal viscera, and to the splanchnic circulation is suddenly diminished. The viscera, which have been crowded into and towards the chest, gravitate, with the blood, towards the emptied abdomen, the brain is robbed of its circulation, and fatal syncope may occur; or the vascular congestion thus induced may be followed by fatal peritonitis. Improper position in tapping, therefore, may be another cause of death; and this, together with the employment of the lancet in cystic dropsy, and the delay of the operation until the vital force is spent, may have originated the opinion that "*of first tappings, one-half have been speedily followed by the death of the subject!*"—the most absurd, most unfounded, and most startling of all surgical opinions,—making simple tapping much more fatal than ovariotomy itself!

Point selected for tapping.—The rule in tapping is to select the linea alba for the introduction of the trocar, at a point from two to four inches below the umbilicus. In ascites and ordinary unilocular cysts this rule will apply. But in ovarian cysts with solid deposits along the mesial line, and in tumors composed of several cavities, such a rule cannot govern the surgeon. The linea alba should not be selected when the sense of fluctuation is absent under it, and the front of the abdomen is occupied by solid tissue. When such is the case, the trocar may be introduced at any point where fluctuation is most distinct, avoiding the ordinary site of the epigastric arteries. In an abdomen greatly distended, the veins are also usually enlarged and numerous, and the wounding of them should be carefully avoided. Should any vessel, however, be divided by the trocar, it can easily be secured by acupressure.

In performing paracentesis through the linea alba, a rare complication may be met with, particularly in connection with an ovarian tumor, that may render it more or less hazardous, even in this locality. A tumor may have formed adhesions to the bladder, and in developing itself may have dragged the bladder upward with it a considerable distance towards the umbilicus. Thus the bladder may be placed directly in the track of the trocar and be transfixed. The same thing may complicate ovariotomy. Hence the necessity of having the bladder emptied immediately before either operation. The examination of the bladder with the sound would render such an accident impossible.

Another and much rarer complication is a *sac-like or per-*

vious urachus communicating with the bladder, or a *tubular prolongation* of the bladder itself. This must be viewed as a malformation, and an accident so remote as never to be looked for; yet it occurred in my own hands in a recent case of ovariotomy, where the knife opened a urinous sac high up in the linea alba, and which communicated with the bladder. The case is so unique that I will here place it on record:

CASE X.—*A urinary pouch in the linea alba divided by the knife in removing a non-adherent tumor.* March 8th, 1871, I removed the right ovary from Miss A. H., of Altoona, aged eighteen years, in the presence of Drs. Gemmill, senior and junior, Fay, King, Benham, Parry, Calderwood, and Clarke. After the patient had emptied the bladder, an incision three inches long was made in the linea alba, midway between the umbilicus and pubes. The abdominal wall was peculiarly formed. It was very thick, vascular, and remarkably muscular,—the muscular fibres interlacing with each other in an extraordinary manner. There was unusual difficulty in reaching the cavity of the abdomen. *Before* penetrating the peritoneum, and immediately on dividing the muscular wall, a small cyst was opened by the knife, and about one ounce of yellowish liquid, resembling ordinary ascitic fluid, escaped. After opening this sac, there still remained considerable abnormal tissue to get through before reaching and dividing the peritoneum and exposing the white, shining coat of the tumor. Not a single adhesion existed. The bladder occupied its normal position. The catheter was used twice a day for the first few days after the operation. Dr. Fay kept me advised of the progress of the case. March 14th, he wrote, "Changed the dressings at half-past three this afternoon; was surprised to find the cloths and compresses pretty well saturated with a thin, serous fluid, exuding from the spaces between the sutures." March 17th, he wrote, "No pus, but a thin, serous discharge from the upper part of the wound, which looks like the secretion from the peritoneum." March 21st, he again wrote, "The thin, serous discharge, which I wrote you about, is much more copious, sometimes completely saturating her clothes, and smells very much like urine." Again, April 3d, his letter says, "The serous discharge is still quite profuse, and comes out about one inch below the upper edge of the wound. The discharge is very thin, and clear as water, and entirely devoid of smell. She passes at least one quart of urine every twenty-four hours. I am satisfied it is in no way connected with the bladder." April 7th, Dr. Fay called to see me, and then said that they had tested the matter to their full satisfaction: that the opening giving exit to the serous discharge was undoubtedly connected with the bladder, as they had collected some of the supposed serous fluid and compared it with the contents of the bladder, and found them to be identical. Since the last report the patient had been instructed to empty her bladder frequently and not allow an accumulation of urine; and after having carried out these instructions not a drop escaped by the wound, and the opening had completely closed.

In the above description of this very interesting case, it will be seen that the bladder itself was not elevated by the non-adherent tumor; that it was not in that locality by an original malformation or malposition; that the catheter was used by the mother twice a day, and, while thus used, prevented the occurrence of the "serous discharge;" and further, that after the patient prevented the accumulation of urine in the bladder, the discharge ceased, and the wound healed. The only conclusion possible, considering the extra-peritoneal and elevated locality of this urinous cyst, is that it was a purse in a dilated urachus, which, although closed at the umbilicus, had from birth maintained a communication with the bladder. For such rare freaks of nature no surgeon can be held responsible, nor can he guard against them.

How to use the trocar.—As paracentesis is a frequent means of diagnosis, a word on the use of the trocar will not be out of place. Tapping is often performed by thrusting the trocar directly through the skin and walls of the abdomen. In consequence of the great resistance offered by the skin, it requires an excessive amount of force to penetrate the abdominal cavity by such an instrument. A less force is required when the canula is arranged so as to fall in behind a shoulder on the stylet than when it is differently constructed. In either form of the instrument, however, an unnecessary degree of pain is inflicted. By means of a sharp bistoury the cutis vera should first be divided to a small extent, through which incision the trocar will be found to enter with comparatively little force and pain, while the incised wound, dressed with a strip of adhesive plaster, will heal up kindly and quickly afterwards.

While, as stated before, the trocar should not be introduced at points in the abdomen where fluctuation is not evident, so the surgeon should be equally cautious to avoid tapping where fluctuation is entirely absent. This may seem an idle caution, but "*dry tapping*" happens sometimes in clever hands, as the following case will show:

CASE XI.—*An abdomen too tight to fluctuate.*—Some years ago a surgeon of this city was called to the interior of New Jersey to visit a lady with an abdominal enlargement, in consultation with two physicians of the vicinity. He examined the patient, decided there was dropsy, and appointed a day when he would return and tap her. He came home, called upon me to borrow my large trocar,—an instrument he had seen me use,—and, at the same time, gave me a hasty account of the case. He told me *the abdomen was so tight that it would not fluctuate.* Being distinguished in other branches of surgery, several years my senior, and not asking my opinion, it would have been presumptuous in me to have said to him, "*You will find no fluid.*" Knowing, too, that no mischief could arise from puncturing a solid tumor, I gave him the instrument, and he departed to the scene of his future disappointment and mortification. The day after his return I happened to meet him on the street, and jokingly inquired *how he had got along with the tapping.* "*Who told you?*" he asked. "*You did,*" I replied: "*an abdomen too tight to fluctuate could yield no fluid.*"

The great importance of the several points referred to under the head of tapping, will be a sufficient apology for the time and space occupied by the foregoing digression.

Shape of abdomen before and after tapping.—When employing tapping as a means of diagnosis, the shape of the abdomen should be noticed while the fluid is escaping and after it is all drawn off. As the fluid is discharging from a non-adherent unilocular cyst, the latter will be found to subside gradually towards the lower part of the abdomen, and, when entirely emptied, the contracted cyst may be detected in this locality by the dull percussion sound, while the upper portions of the abdomen, from which the cyst has receded, and which may have been dull on percussion before the tapping, will now be resonant. If after this the abdomen be deeply grasped by the hand, so as to include its attenuated walls, together with the subjacent coats of the emptied and relaxed cyst, valuable information will be obtained. Upon pressing and rubbing them between the thumb and fingers, the folds of the cyst will be noticed slipping away from the grasp, while the abdominal walls are still retained.

After tapping a non-adherent unilocular cyst, the shape of the abdomen is worthy of notice; the cartilages of the ribs are pushed outward, the diaphragm is elevated to a greater or less extent, and the walls, with the contents of the upper portion of the abdominal cavity, sink towards the spinal column; while on a line below the epigastric and hypochondriac regions the abdomen is not found to be incurvated, but retains its level, and, if a thick-walled cyst be present, it is somewhat protuberant. A cyst adherent to the walls of the abdomen will, of course, not subside towards the pelvis as the fluid is drawn away, the dull percussion sound will be more extended, the resonant area diminished, the concavity of the diaphragm not so manifest, and the abdomen above as well as below will retain its level.

A nodulated, multilocular, or partly solid cyst is much more readily diagnosticated during tapping than a unilocular cyst. In such cases, the abdomen does not subside evenly, and the inequalities are frequently noticed by sight, and are always detected by the touch. Sometimes one half of the tumor will consist of a single cyst, while the other half will be a semi-solid mass, composed of innumerable small cysts. In this case, on emptying the large cyst, that side of the abdomen will sink in, while the other side will remain prominent, and in the latter there may be no fluctuation. Occasionally the whole tumor will consist of two large cysts of equal, or nearly equal, size, without any nodulated surface or solid deposit in its walls, resembling in this respect a simple unilocular cyst. Tapping, in such a case, will also cause a subsidence of one half of the abdomen, while the other half will not be altered in form, and in this portion fluctuation can readily be detected. In this description of cyst the canula should not be withdrawn until the septum is perforated and the remaining cyst evacuated. In both these instances, if parietal adhesions be absent, the tumor remaining after the one cyst has been emptied can be pushed into the central and lower part of the abdomen, while, if adhesions exist, this cannot be done without our being sensible, by the peculiar drag, that the wall of the abdomen is attached to the tumor. Frequently there is one large cyst, with one or more nodules upon its surface, which nodules may escape detection until after tapping. This nodulated condition aids the diagnosis very much, and also enables us, by the greater or less mobility of the nodules, to decide upon the presence or absence of adhesions. Again, the tumor may be a multilocular mass, composed of several moderate-sized sacs mingled with numberless diminutive cysts, resembling in appearance ordinary conglomerate. In tumors of this character tapping will procure but little fluid, and but slightly alter the shape of the abdomen.

A tumor masked by surrounding ascitic fluid.—An exceedingly rare complication may be met with, and which tapping alone can detect: it is a tumor entirely immersed in a large quantity of peritoneal fluid, and wholly masked by it. In this case the cavity of the peritoneum will first be entered by the trocar, and, although at the time the operator may think he is puncturing a cyst,—inasmuch as all the characteristics of a cyst are present,—he will be surprised to find nothing but the fluid of ascites escaping. After a time, however, as the walls of the abdomen subside, he becomes sensible of the existence of a more or less solid body. This body may be irregular in shape, or uniformly smooth and globular; it may be solid and hard, or elastic and fluctuating; it may be a uterine fibroid tumor, or an ovarian cyst; or it may be an enlarged spleen, a diseased liver or kidney, or an omental tumor. Before removing the canula, the tumor should be carefully percussed, and, if it fluctuate, it should be perforated by the trocar, when, unless there is a previous opening in the cyst wall, a fluid entirely different from the former will escape, and at once decide the character of the tumor. (See Case XXIII.)

Tapping imperfect and unsuccessful, in consequence of the thickness and viscidity of the fluid or the solidity of the tumor.—In performing paracentesis abdominis, if no fluid escape through the canula, the surgeon should not hastily decide against the existence of an ovarian tumor, as this may be composed wholly of small cysts, the walls of which close the mouth of the canula, and prevent the escape of the fluid which they contain. In such an event a sound should be passed through the canula, to facilitate the escape of the fluid by pushing aside the occluding valvular curtains. Fibrinous clots, occurring so frequently in large cysts when nearly emptied, may obstruct the flow, and require the sound to displace and disintegrate them. Again, the tumor may be cystic, with contents so viscid as not to escape through the largest-sized canula. In colloid disease of the ovary, more or less distinct fluctuation may be met with, yet no flow of fluid will follow the introduction of the trocar. The enlarged ovary, also, instead of being cystic, may be solid, consisting, in very rare instances, of fibroid tissue, or less rarely, of a malignant deposit. In cases like these it is well to remember that a soft, cellular, uterine fibroid likewise partakes strongly of the characteristics of an ovarian cyst, but will yield no fluid unless its intercellular structure be broken up by the sound introduced through the canula, and then only a small quantity will escape slowly. In all of these cases, however, we gain both positive and negative testimony by means of the operation, which is valuable in arriving at a correct diagnosis.

The physical, chemical, and microscopical characters of the fluid.—One of the best evidences of the existence of an ovarian cyst, to be derived from tapping, is the character of the fluid,—as determined by its physical, chemical, and microscopical characters.

The physical character of the fluid.—A surgeon, who has had much experience in tapping, and who has been carefully observant of the fluids drawn from different forms of dropsy, can, in the large majority of cases, draw a very correct inference as to the character of the disease so soon as he sees the fluid escape from the canula. If it comes from an ovarian cyst it will be found generally to differ from every other kind of fluid in color and consistency. At times it looks like starch-water, soapy water, muddy water, soft-soap, or the white of eggs, or resembles in appearance an infusion of coffee, or of chocolate, or the dregs left after making currant wine, or it may be yellowish, greenish, or even inky in color. These peculiarities of color will be usually associated with other physical conditions. The fluid may be cerebriform, gelatiniform, grumous, stringy, puruloid, purulent, and, accompanying the last portions drained off, flaky or cheesy. Occasionally there floats on the surface, as it stands in the vessel, an oil-like liquid, which, if spilled upon the clothing or abdomen, may sparkle like crystals or spangles. This floating stratum is cholesterine. In the case of dermoid cysts of the ovary, the fluid will be mixed with hair, even long tufts of hair, and other ingredients. I once removed, by tapping, from such a cyst occurring in a young unmarried virgin girl, hair eleven and a half inches in length. At another time I took, in the same way, from a married lady, at least one quart of small, round, yellowish bodies, precisely like white mustard-seed. They floated on the surface of a bucketful of ovarian fluid, in which also were scattered short hairs about a half an inch long. The different cysts of the same multilocular tumor may contain fluids entirely dissimilar,—one containing a fluid resembling starch, another a fluid like pus, another a fluid like chocolate, another an olive-colored fluid, another a fluid resembling clear serum, another a fluid like the white of egg, etc. When, therefore, such fluids are met with, the existence of an ovarian tumor may be rightly inferred, unless disproved by other evidence. Still, when a clear, transparent fluid flows from the canula, strongly resembling ascitic fluid, we should hesitate before deciding upon the character of the disease, as there are instances of such fluid coming from a cyst connected with the ovary, as the following case will show:

CASE XII.—*Bilocular tumor diagnosticated by paracentesis.* December 13th, 1843, I examined Mrs. S., aged sixty-one years, and tapped her in order to complete the diagnosis. Seven pints of lemon-colored, very *clear*, *transparent* fluid, of the consistence of serum, were drawn away. The abdominal tumor, however, only diminished on the right side, leaving the intumescence of the left side equally as great as it had been before tapping. Fluctuation was distinct throughout the enlarged left side, showing the existence of another sac. This cyst was also tapped, and ten pints of fluid, resembling the first in color and consistence, were removed.

The fluid in the above case was identical in appearance and consistence with that of ascites, and had it been taken from a unilocular cyst, with attenuated walls, and free from solid deposits, instead of a bilocular cyst, it might readily have been mistaken for peritoneal fluid, and a faulty diagnosis have been the consequence.

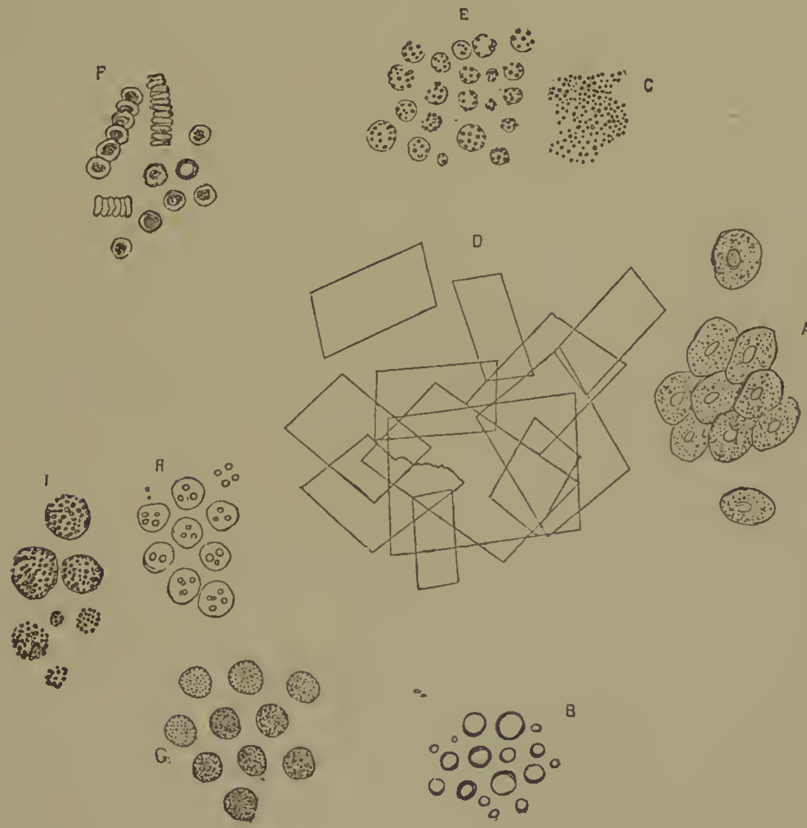
Chemical character of the fluid.—The chemical character of the fluid should be next examined. To a certain extent this can be done in the sick-chamber at the time of tapping. A tablespoon, filled with the fluid just drawn, and held over the flame of a lamp, will, in a few moments, decide the question whether or not it contains albumen. The presence of albumen will be indicated by the coagulation of the fluid, and its amount by the extent of that coagulation. Sometimes the fluid will thicken so much that the spoon may be inverted without dislodging it. Indeed, it will frequently thicken like the white of egg, so that the spoon containing it can be knocked, while inverted, against the table without displacing it. This was the case with the clear, serum-like fluid just referred to in Case XII. Usually the coagulum thus formed is lighter in color than the fluid. Sometimes albumen may be present only in small quantities, or held in solution by the presence of an alkali, and heat may not satisfactorily detect it. In this case nitric acid is a preferable test. Albumen, however, is usually present in such large quantities, that heat will promptly decide the question.

It must not be inferred from the above remarks that the presence of albumen in dropsical fluid, drawn from the abdomen, is pathognomonic of an ovarian tumor. It will also be found in ascitic fluid, especially when the latter is the result of active peritonitis, and in the fluid of cysts developed in connection with other of the abdominal viscera, but usually it is not so abundant as in ovarian fluid. The striking physical characteristics, before referred to, are sufficiently indicative of ovarian dropsy without calling in the aid of the albumen test, but in such a fluid as was found in Case XII., the great excess of albumen would be very valuable as confirmatory of the diagnosis of ovarian disease.

Microscopical character of the fluid.—In the large majority of cases, the above physical and chemical properties of the fluid may be considered amply sufficient evidence for all practical purposes in deciding upon the existence of an ovarian cyst; but there are cases involving great doubt, and where the diagnosis is to be made in reference to the question of ovariotomy, no aid within reach should be omitted. In doubtful cases, the microscope furnishes the most positive means of deciding the question. The fluids of ovarian dropsy contain an abundance of cell-forms, as seen in Fig. 6, often rich in oil; frequently blood globules and plates of cholesterine; granular cells varying in size, which are supposed by some to contain the material upon which the color of the fluid depends; epithelial cells, single and in clusters; and sometimes pus.

The chemical and microscopical examination of the fluids has been conducted by Dr. Drysdale, whose paper on this subject will be found embraced in a separate chapter. A synopsis of a few of his earlier observations may be referred to here.

Fig. 6.



A. Epithelial cell.
B. Oil globules.
C. Granular matter.
D. Cholesterine.
E. Ovarian granular cell.*
F. Blood cell.
G. Pus cell.
H. Pus cell after adding acetic acid.
I. Gluge's inflammatory corpuscle.

In examining with the microscope thirty-four specimens of ovarian fluid, Dr. Drysdale found in thirty-one of them fine granular cells, which varied in size, were always free, and differed materially from the inflammatory corpuscles of Gluge, and from the pus or mucus cell.

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* See Chapter XXIV.

In eleven of the fluids he discovered small epithelial cells.

In nine cholesterine was present.

In only three of the fluids did he find all of the forms above depicted.

In five were granular and epithelial cells alone.

In four granular cells and cholesterine alone.

In two cholesterine and epithelial cells alone.

Dr. Drysdale had drawings made of many more specimens of ovarian and other dropsical fluids, but they were accidentally destroyed. The above, however, serve to prove that the free, delicate, granular cell is characteristic of ovarian fluid, it being only absent in three of the fluids examined; and in one of these the fluid was sent from a distance and not examined for a long time after the tapping.

In seventeen specimens of fluids obtained by tapping the abdomen in cases of ascites and peritoneal cysts, a granular cell was found only in the fluid from one case, and differed from the granular cell of ovarian cyst in being adherent to a layer of coagulated albumen, and not appearing free in any numbers.

Since the above observations were made by Dr. Drysdale, the subject has been well matured by very many careful examinations, the results of which will be found embodied in his paper.

In concluding this portion of the subject, I may remark, that I know of no other fluid whose physical, chemical, and microscopical characters correspond with those of the fluid of an ovarian cyst; *and hence when a fluid, drawn from the abdomen, possesses the above characteristics, it may be considered diagnostic of ovarian disease.*

I desire, in this connection, to refer to a matter of a personal character. Dr. Waldo J. Burnett, of Boston, wrote an essay on "*The Cell*," and presented it to the American Medical Association, in May, 1853, as a prize essay, and which was justly honored by that distinction. In considering epithelial epigenesis as occurring in the ovarian tissue, he holds this language:

"From its not uncommon occurrence, and its almost necessary fatality, epithelial epigenesis occurring in this tissue has an importance quite exceeding that of its occurrence elsewhere. These relations, however, are more of a practical nature, and I have desired to look at the subject only in an histological point of view. Even in this light, I should not have discussed it thus fully, had I not felt the justness of asserting my claim for the priority of the view of *the single nature of the cystic disease of the ovary, it always being an epithelial epigenesis of the Graafian vesicle.*"

Soon after the meeting of the association, Dr. Burnett spent several days in Philadelphia, for the purpose of revising his essay for publication, and we had a conversation on this very subject. On referring to his views respecting the Graafian vesicle, I called his attention to the fact that I had eight years' priority for the same or similar views. My views, however, were not based upon microscopical examinations, but were deduced from the consideration of the functions of the ovary, and were published for the very purpose that the idea therein contained might be developed by the histological pathologist. In the *American Journal of the Medical Sciences* for April, 1845, I use this language:

"When the Graafian vesicles take on diseased action and become distended, is this not indicated by the fluid possessing those characters—greenish, grumous, soapy, chocolate-like, etc.—which are considered diagnostic of ovarian dropsy? And when the fluid is clear, transparent, and serum-like, does it not indicate that the disease has been developed exterior to the Graafian vesicles, in the stroma or parenchymatous structure of the ovary, or exterior to the ovary, in some of the reflections of the peritoneum? And when the tumor is multilocular,—the several cysts containing different kinds of fluid, and exhibiting a compound character,—does it not indicate a development of disease both in the Graafian vesicles and the stroma of the ovary? I merely throw out these queries as a hint to those physiologists who are now engaged in discussing this pathological question, not intending to pursue the inquiry here, as it has no bearing upon the surgical consideration of the question."

The tactus eruditus.—I have thus endeavored to give a summary of the general symptoms and signs of ovarian tumors. In a large majority of cases I consider them perfectly reliable in diagnosing the existence of such tumors. To the aids in diagnosis I might have properly added the *tactus eruditus*, but as this indescribable and non-communicable faculty of nice perception belongs to the surgeon, and not to the patient, and is acquired solely by cultivation and experience, I can only allude to it as a qualification of great use in deciding upon the value of many of the phenomena heretofore referred to.

As abdominal enlargements frequently occur from other causes, and simulate, more or less, ovarian tumors, and *vice versa*, the subject of Differential Diagnosis will next be considered.

SECTION II.

DIFFERENTIAL DIAGNOSIS.

Tumefactions of the abdomen may arise from a variety of causes, both morbid and natural; and as they may be mistaken for an ovarian tumor, it is of the utmost importance, in a surgical point of view, to draw a correct line of demarkation between them. This, at times, is exceedingly difficult, but can almost always be accomplished by giving to each case the proper degree of attention and scrutiny. In order to facilitate the study of the enlargements of the abdomen which simulate ovarian dropsy, the following arrangement has been adopted:

1. Ascites.
2. Cysts of the broad ligament.
3. Other cystic tumors.
4. Dermoid cysts.
5. Pregnancy.
6. Pregnancy, complicated with ovarian dropsy.
7. Tumors of the uterus.
8. Retroversion of the uterus.
9. Retention of the menstrual fluid.
10. Dropsy of the amnion.
11. Enlargement of abdominal viscera.
12. Distention of the urinary bladder.
13. Accumulation of fæces in the intestines.
14. Accumulation of gas in the intestines.
15. Muscular derangement of the abdominal parietes.
16. Inflammatory deposits in the abdominal cavity.
17. Pelvic tumor and abscess.
18. Spinal curvature, lumbar and psoas abscess.
19. Malignant tumors of the abdomen.
20. Rectocele and cystocele.
21. Hypertrophy of the abdominal wall.

CHAPTER I.

ASCITES.

The accumulation of fluid in the cavity of the peritoneum is a very common form of dropsy, and is accompanied with symptoms not unlike, in some respects, those of a unilocular ovarian cyst. The former, therefore, is sometimes mistaken for the latter, but more generally the opposite error occurs. As ascites, in its early period, is a condition usually associated with impairment of the general health, and dependent upon some serious lesion of an important organ, and, on the other hand, as ovarian dropsy commonly originates in a system exhibiting no corresponding derangement of the vital functions, we have, in this early history, a pretty good index to the character of the disease. Anything which will obstruct the portal circulation, or destroy the balance of absorption and secretion, such as chronic peritonitis, cardiac, hepatic, splenic, renal, or other visceral disease, may cause ascites, and will necessarily produce a corresponding impairment of the general health. The ovary, however, in that peculiar morbid condition resulting in its hypertrophy and cystic degeneration, appears not to affect the vital organs; and the patient, therefore, for a long time maintains her general health, or until the functions of these organs are impaired by pressure from its increasing size. Œdema of the inferior extremities is a much more frequent accompaniment of ascites than of ovarian dropsy, particularly in the early period of the disease. In ascites the accumulation of fluid is diffused throughout the abdomen, while in ovarian dropsy it is more circumscribed, and in the form of a perceptible tumor. An examination per vaginam, in ascites, will show the pelvis to be empty, the uterus in its proper axis, its neck sometimes obliterated, unless the peritoneal accumulation is the result of a pelvic or uterine tumor; while in ovarian dropsy, the uterus may be pressed down against the perineum, or pushed out of its axis towards any part of the pelvic walls, or entirely elevated out of the basin of the pelvis, at the same time that solid or elastic bodies may be found occupying its place. Usually, however, the uterus, in ovarian dropsy, is discoverable in the pelvis, with its cervix fully developed.

The form of the abdomen is sometimes characteristic of the kind of dropsy. In ascites the shape generally varies with the position of the body. This is owing to the abdominal cavity containing both the intestines and the dropsical fluid, the latter always gravitating to the lowest point, and producing a corresponding distention. Hence, in ascites, when the patient is on her back, the sides widen, and the abdomen usually becomes flatter. This is not the case in ovarian dropsy: here the fluid is inclosed in a cyst, and consequently there can be but little variation in shape in any position assumed by the patient. In ascites the shape of the abdomen is also usually more symmetrical, inclining to be ovoid. While in largely-developed ovarian cysts the general form of the abdomen is more spherical, and inequalities may often be seen here and there over its surface, the false ribs are pressed outward, the xiphoid cartilage upward, and the whole lower portion of the chest is widened.

Palpation and percussion afford valuable aids in the differential diagnosis. In ascites, the abdominal walls present a more uniform surface, are more yielding and soft everywhere to pressure, while in ovarian dropsy there is more resistance to pressure, and inequalities and indurations can often be felt at different points. In the diagnosis of ascites the intestinal tone or percussion is particularly valuable. When the site of the intestines is percussed, a resonant sound will be elicited in consequence of the air which they contain, while over the locality of the fluid a dull sound will be evolved. If the patient should be in an upright position, the percussion sound will be resonant over the epigastrium, and dull below. If in a supine position, the resonant sound will be in the umbilical region, and the dull sound along the sides. If she lie on one or the other side, that uppermost will be resonant, while the umbilical region and the lower side will be dull. Thus, the resonant sound will follow the intestines, which float on the surface of the fluid, and will always be detected at the highest point, while the dull sound will follow the fluid, which gravitates to the lowest points. In ovarian dropsy, however, the walls of the cyst constitute a distinct barrier, which pushes everything beyond it as the cyst becomes developed, and over this cyst the percussion sound is always dull, no matter what may be the position of the patient, while around its borders, if the tumor be of moderate size, the resonant sound will be distinguished. As the ovarian tumor enlarges, it usually crowds the intestines to one or the other side, sometimes into the epigastric and frequently into the hypochondriac regions. The dull percussion sound, therefore, will always be found in the lower and central portions of the abdomen in all positions of the body; and in ordinary-sized tumors the resonant sound may be detected in the lumbar, hypochondriac, and epigastric regions at the same time. In very large ovarian tumors resonance may be absent everywhere except on one side of the spinal column.

The character of the fluctuation may also be considered in the distinctive diagnosis between peritoneal and ovarian dropsy. In ascites, the fluctuation is distinct throughout all parts of the abdomen. So it is in a unilocular ovarian cyst, which fills up the whole abdominal cavity. But in a bilocular cyst, the septum will break the wave, and the fluctuation will not be so well marked, and will vary at different points of the abdomen; the distinctness of fluctuation will also diminish as the cysts multiply in number, so that in a multilocular tumor, composed of small cysts, the fluctuation will be substituted by a mere vibration. Besides, adipose deposits are more apt to accompany the earlier periods of ovarian dropsy than those of ascites, and this condition of the abdominal wall often obscures the wave of fluctuation.

These observations, except those referring to fluctuation, apply to the characteristics of well-marked cases of ascites, and equally plain cases of unilocular ovarian cysts; but occasionally we meet exceptional cases which are calculated to puzzle and confound the surgeon. I shall, in illustration of these remarks, refer to several instances of difficulty which have occurred to me in the course of practice.

A. **Ascites simulated by air in an ovarian cyst.**—There is a certain condition of a unilocular ovarian cyst which almost exactly resembles a case of ordinary ascites in all the physical signs. I allude to a cyst containing air. The existence of air in a cyst need not be looked for in any case previous to tapping, unless a communication should exist between it and the bowel. Carelessness in tapping, and particularly when the operation has been performed in the upright position, may result in the ingress, through the canula, of atmospheric air, which, not being removed by absorption, remains afterward to complicate the case. Consequently, should the peculiar physical phenomena of ascites exist previously to tapping, we may, *a priori*, conclude the accumulation to be in the peritoneal cavity; but should they be found after tapping, we must not hastily arrive at the same conclusion. It may be readily understood, that when this occurrence takes place in unilocular cysts, the air, floating on the encysted fluid, will, like the inflated intestines in ascites, always assume the most elevated position in reference to that fluid; and no matter how the patient's body may be placed, percussion will elicit a resonant sound at the highest points, and a dull one at the lowest, precisely as occurs in uncomplicated cases of ascites.

a. CASE XIII.—*An ovarian cyst simulating ascites; tapped fifteen times; microscopic test of the fluid.* March 24th, 1859, I examined Mrs. S. S., of Montgomery County, Pennsylvania, aged about forty years. She had been under the care of Drs. Gregg and Detweiler, and before I saw her she had been tapped fourteen times, the last time six days previously, losing at each tapping three or four gallons of fluid, which, she said, resembled muddy water. She understood her physicians to say that there was a cyst, in which the fluid was contained, and that this must be removed before she could get well.

I examined her in company with Dr. Burpee, and although it was so recently after the tapping, she was then as large as a woman six months pregnant. By palpation no nodules, ridges, or cyst wall could be detected to indicate an ovarian tumor. When the patient was on her back, a *resonant* sound was discovered by percussion in the region of the umbilicus and in the epigastrium, and a *dull* sound below the umbilicus and along the sides. When the patient was on her right side, the left was resonant, while the umbilicus was dull, and, *vice versa*. Fluctuation was distinct. All these were peculiarly the phenomena of ascites, and, associated as they were with a cachectic and broken-down constitution, created strong doubts as to the presence of ovarian dropsy.

I now carried the examination further. The pelvis was found free from anything abnormal. The uterus was central, small, and quite movable. The os admitted the index-finger, and the sound, by which the uterus could be moved about readily, entered two and a half inches.

I sent the patient home, expressing some doubt about the case, and requested her physicians, when they tapped her again, to send me a specimen of the fluid, in order that this doubt might be cleared up.

March 30th, her physicians tapped her the fifteenth time, and sent to me some of the fluid, which I placed in the hands of Dr. Drysdale for examination. It was milky in appearance, did not coagulate by heat, but frothed a good deal on boiling, and had flocculi floating through it. Dr. D. stated that the microscope decided it to be *ovarian* fluid, which confirmed the diagnosis of her physicians.

I have no doubt that air had gained admission into the cyst through the canula in tapping, and that the walls of this cyst might have been detected immediately after the evacuation of the fluid, which, together with the microscopical examination of the fluid, would have enabled us to certainly diagnose the real character of the case in time to have afforded the patient the chance of an operation.

b. CASE XIV.—*An ovarian cyst tapped twice; subsequently a* *communication established with the bowel, by means of which the contents of the cyst were evacuated, and flatus entered the cyst.* September 1st, 1869, I visited Princeton, N. J., for the purpose of operating on Miss E. B. R., a daughter of a clergyman of that city, and a patient of Dr. J. A. Wikoff. In his letter, requesting my attendance, Dr. W. wrote:

"She is a young lady of about twenty-five, has recently come under my care, and is suffering from an ovarian tumor. Three years ago she was living near New York, and was under the care of Drs. Delafield and Markoe, who twice tapped her preparatory to ovariotomy. Her health, however, failing, they deemed it prudent not to operate; but just as they imagined she was about to die, nature interfered, and relieved her in a most remarkable way. To within a few months she has been in comparatively good health, but now the tumor, which I think is composite in its nature, is increasing, and her health is suffering."

The following intelligent history of her case was written by her father:

"The first symptoms of this disease were noticed by her mother and herself in April, 1865, there being a hardness of the bowels, attributed by them to *dyspepsia*, and which was accompanied by paleness and want of appetite. She paid a visit of six weeks at this time to some friends in Camden and Philadelphia, and when she returned, in June, there was a manifest enlargement of the stomach and waist, which alarmed us; when we called a physician, who pronounced it *dropsy*, and gave, without benefit, the ordinary remedies for that disease. Her strength being reduced (under this treatment for two weeks) very much, and violent pains increasing, we took her to New York, and placed her under the care of Drs. Delafield and Markoe, who, after treatment of a week, pronounced it ovarian dropsy. They then prescribed iron, with careful diet and exercise, and a return to the country. In September, iodine was substituted for iron, with palliatives. She continued to increase in size through the winter, until she was enormously swollen, the fluid rising very high, even displacing the heart, so that it seemed to beat under the shoulder. Her flesh had been very much reduced, yet she was strong enough to go up and down stairs, and ride out, although very heavy upon her feet.

"She ate moderately of anything she fancied, with tolerable comfort. In February, 1866, she was taken to New York, to be tapped, not suffering from the trip. My wife says that *more* than two pails of fluid, or fifty-two pounds, were evacuated, of the appearance and consistency of stale *lees* or *porter* (perhaps a little thicker). She was very weak after tapping, but soon rallied, and in a little more than a week was walking about the house, and then visited with comfort some friends in the city.

"She soon began to fill again, although it did not show for a month. She regained strength and flesh rapidly, and seemed well, notwithstanding the gradual increase in size, until July, when her health began to suffer. In the latter part of August, there seemed to be a regular recurrence of fever at night, which Dr. M. thought to be independent of the disease, and for which he prescribed (although he did not see her), without effect. During the intense heat of that season, nervous symptoms of an alarming character set in with the nightly fever. One Friday night they intensified, and the next day continued so that the family physician said that her brain was affected. Saturday night she had a spasm, accompanied and followed by violent demonstrations, screaming, gritting the teeth, and terror, like *delirium tremens*. Between 2 o'clock A.M. Saturday and 2 o'clock P.M. Sunday, she had six spasms. At the latter hour (Dr. Markoe arriving from Long Branch) she was persuaded to be tapped, and remained calm during the operation, about three-fourths of an hour. Three-fourths of a pailful of *gelatinous* fluid was drawn away, with sensible relief, although the excitement (which Dr. M. pronounced hysterics) subsided but little. She seemed strong, and could not be kept quiet through the night, but the next morning was very much exhausted, so that we used brandy and hot bricks at the feet to restore her. She gradually, however, increased in strength and grew a little more calm after a week, but was far from being like herself.

"It was evident that she was slowly filling again, but her habits were so whimsical and secretive that we could not notice particularly. During this time she went up and down in the house and out-of-doors as she pleased, but would not see any one, or even the members of the family more than could be avoided; went to the table after meals, and helped herself, as she would not be waited on.

"About the last of September, 1866, we noticed a manifest diminution, accompanied by violent *diarrhœa*, for two weeks or more, ending in entire relief both of body and mind, as she became calm and natural just in proportion as the fluid passed away. In two or three weeks she had regained both strength and flesh, and seemed like herself. She spent several weeks in Camden and Philadelphia, enjoying herself, during this winter, as much as ever before.

"In the summer of 1867, she noticed a lump, as large as a walnut (she thinks on the right side), which gradually increased during the summer to the size of an orange, and in the fall seemed to flatten, and slowly to spread laterally. But from the time she noticed it first, in 1867, until in 1868, it seemed to be hard over the stomach. She could push it with *ease* (as she expressed it) *from one side of the stomach to the other;* and after it became larger, could lift up the sides of it with her hands under the skin. September, 1868, she noticed a tendency to increase, but it gave her no inconvenience until within two months, when Dr. Wikoff became cognizant of the case, to whom I refer you for further details."

Two or three days before visiting the patient for the purpose of performing ovariotomy, she was taken with sudden diarrhœa, accompanied with copious watery and dark-colored discharges, affording her considerable relief, and causing some subsidence of the abdominal enlargement. Still, she was as large as a woman at full period of gestation. When lying on her back, the percussion sound was resonant over the whole abdomen in front, and dull below and along the sides, just as is found in ascites. In an upright position, resonance existed over the epigastrium; and when lying on either side, it was noticed in the opposite side. A large cyst, with multilocular deposits in its walls, could be detected, occupying the whole cavity of the abdomen, containing both liquid and air,—some of the liquid, no doubt, having escaped into the bowel, and flatus from the bowel having found its way into the cyst. This was made still more evident by succussion. The body of the uterus was wholly buried in a mass occupying the superior strait of the pelvis, and was immovable. The os tincæ could scarcely be detected on the left side of the pelvis. The sound entered the uterus two inches.

Under these circumstances I declined to operate, as the opening in the bowel was calculated to cause a fatal result. Besides, nature itself was making an attempt to relieve the patient. September 30th, 1869, Dr. W. wrote:

"Miss R. is gradually improving. The cyst has completely emptied itself, and she is no larger than natural. The discharges kept up for about three weeks, from twenty-four to ten a day."

B. **Ascites resembling unilocular ovarian dropsy.**—There is a form of ascites which, in its physical signs, resembles unilocular ovarian dropsy. The effusion, in these cases, usually results as a consequence of acute peritonitis, the inflammation at the same time uniting the stomach and intestines and binding them down to the root of the mesentery, so as to prevent them from floating on the surface of the fluid. In these cases, as in those of unilocular ovarian cysts, the resonant and dull sounds are found to occupy the same points in all varying positions of the body.

a. CASE XV.—*Ascites, the result of tubercular peritonitis, resembling unilocular ovarian dropsy; autopsy.* March 10th, 1851, I visited Miss J. McK., aged ten years. On the previous Christmas she was taken ill with severe abdominal pains, succeeded by symptoms of peritonitis, which resulted in dropsical effusion three weeks before I saw her. There was great distention of the abdomen, the respiration was labored and oppressed, and the pulse very weak and rapid. In every position of the body the percussion sound was resonant only in the epigastric and hypochondriac regions, and dull everywhere else. Fluctuation was distinct and general.

The next day I removed, by tapping, sixteen pints of an orange-colored fluid, which firmly coagulated by heat. After the removal of the fluid, the upper portion of the abdomen still continued to be considerably distended by flatus.

March 15th the patient died, and the next day a post-mortem examination was made. The signs of peritonitis were general, the whole peritoneum being affected, while the inflammation extended even into the very substance of the viscera. The omentum was greatly thickened, and adherent both to the walls of the abdomen and to the intestines. The latter were glued together, and consolidated into one mass, bound down close to the vertebral column, and covered with innumerable points of yellow matter. The ascending colon was in a very peculiar condition. Its walls were greatly thickened and indurated; it was moderately distended, and apparently filled with hard bodies; on examination, these hard bodies were found to be deposits of lymph in its walls, varying from a quarter to half an inch in thickness, some assuming a cellular form, and quite as large as a hickory-nut, so as to almost obstruct the passage through the bowel.

b. CASE XVI.—*Ascites, following tubercular peritonitis, mistaken for ovarian dropsy; autopsy.* September 17th, 1849, I visited Mrs. J. B., of Delaware County, Pennsylvania, in consultation with Drs. Walker and Blackfan. The patient was forty-nine years old, and had enjoyed good health until one year before, when she was seized with severe pain in the right side, passing across the epigastric region. About six weeks before my visit she commenced swelling, and arrived at the size of nearly full pregnancy in two days. Active treatment, including salivation, had produced no effect in retarding the progress of the disease.

The abdomen was quite protuberant, and did not alter its shape on changing the position of the body. It was dull on percussion everywhere, except along the right side, where it was resonant, and over the epigastric and umbilical regions, where the resonance was very indistinct. These phenomena of percussion persisted in every position of the body. Fluctuation was distinct everywhere.

The uterus was low in the pelvis, apparently healthy, and its mouth sufficiently open to admit the finger readily. The fluid could be detected in the superior strait.

The breathing was labored and frequent; the pulse soft, varying from 100 to 106 per minute. There was no trouble in urination or defecation.

At this visit I tapped her of twelve pints of greenish-yellow or cider-colored fluid. It was thicker than ordinary serum, and flowed through the canula in a continuous stream. It was firmly coagulated by heat.

After the fluid was withdrawn, I examined the abdomen again. There appeared to be a cyst folded about the orifice of the canula, and hard nodules could be felt in the epigastrium and to the left of the umbilicus, besides a substance resembling thick folds of a cyst, for three inches round the point of perforation. The introduction of the trocar was resisted, and it was tightly grasped and held on being withdrawn. On examining per vaginam again, a slightly resisting substance, occupying the upper strait of the pelvis, could be detected.

The above case having been marked by so many features resembling an ovarian tumor, disposed me to consider it of that character, although not without considerable hesitation. The understanding, however, was, that should the fluid accumulate again, I would consent to gratify her wish to have the abdomen opened and explored.

October 3d, sixteen days after, the patient was brought to Philadelphia, wishing to undergo a surgical operation for the cure of her disease. Before finally deciding upon the propriety of such a measure, I again examined her with great care. The abdomen was nearly as large as before, and retained its form and prominence in every position of the body. It was pretty uniform in shape, but rather more protuberant on the left side. On percussion, there was a semi-tympanitic sound in the umbilical region, and a quite dull sound over the epigastrium and elsewhere. Fluctuation was distinct everywhere, while the ear, placed upon the abdomen when percussed, recognized a muffled-drumlike sound in all parts. Hard masses could be felt in the abdomen, particularly above the umbilicus, and to the left of it, and also low down on the right side. These were detected by making sudden and deep pressure, which displaced some intervening fluid, and enabled the fingers to strike the hard substances beneath.

The os tincæ presented forward, and was patulous. The sound entered the uterus two and a half inches, which was fixed, and scarcely movable by sound or finger. The pelvis was occupied by a resisting, immovable mass, which enveloped the body of the uterus. The position of the bladder was natural, and the sound introduced into it caused no pain.

October 4th, I again saw the patient, in company with Dr. E. A. Atlee and Professor W. R. Grant. They both examined her carefully, considered the case ovarian, and recommended an operation. But, not feeling satisfied with the correctness of the diagnosis, I made another visit in the evening, in order to procure a more exact account of her history and symptoms, and obtained from her the following facts:

Menstruation first occurred after her sixteenth year of age, and continued to be regular. She was married at the age of twenty-three years, and had six children, the youngest being now fifteen years old. Twenty years before she had a severe attack of disease of the kidneys, from which she suffered more or less ever afterwards. In 1846, she passed bloody urine for one or two days, accompanied with great distress in the back. About the same time she noticed a small sore spot in the right hypochondrium, and in this region she felt as if something tore away whenever she stooped to put on her shoes or rose up again. At this time the pain, at this point, was very severe, but lasted only a few minutes. It gradually grew worse and worse, but with intermissions of several months. The attacks then lasted for twenty-four hours, not continuously, but returned several times during that period. As time advanced, they returned oftener and lasted longer, sometimes continuing two weeks. Just before the swelling commenced she had a very severe attack of the pain. Dr. Blackfan, who attended her, considered it to be acute disease of the liver. For several weeks before this, she was seized, in the morning after getting up, with severe cramp-like pains, so that her abdomen was drawn quite flat. At that time she thinks pressure did not hurt her, although the act of walking did. She thinks the swelling began quite low down, with a great deal of soreness. The urine was scanty, and, on standing, deposited a brick-dust sediment, and emitted a very offensive putrid odor. The menses were suspended last summer for two months, but returned the last two periods with an interval of three weeks. The tongue was red. The pulse was 116. Emaciation was extreme. Her sensations have always indicated that the disease commenced in the region of the epigastrium. She was in the habit of taking laudanum to relieve her great suffering.

Four days after she had been tapped, the adhesive strip applied to the wound made by tapping was removed, and, upon her attempting to get up afterwards, the wound opened, and was followed by a large discharge of water, which continued to flow for two days. This fluid did not coagulate by heat.

In comparing the history with the present combination of symptoms, I immediately decided against an operation, considering the case as one of inflammation, resulting in effusion, and not one of ovarian dropsy. Before leaving her, however, I ordered a dose of castor oil to relieve constipation, and also interdicted the use of laudanum until the next morning, at which time I intended to call the consultation again, in order to revoke the previous decision.

I saw her early the next morning, October 5th. Before taking the oil, the patient commenced vomiting, and threw up stercoraceous matter. The oil was taken afterwards, was retained about one hour, and was then rejected, together with more of the same kind of matter. She continued to vomit feculent matter all night, and was still doing so at my visit. The vomited matter amounted, in all, to about two quarts. It was thin, yellow, and most offensive. Her pulse was 120, small and feeble, and her countenance Hippocratic. She was sinking rapidly. I ordered a laxative enema to be given every hour, which induced alvine evacuations, and the vomiting ceased.

Drs. Bruce, of Pittsburg, E. A. Atlee, and Grant met me at

11 o'clock A.M. The symptoms by that time were considerably ameliorated. The opinion expressed in reference to an operation was reconsidered and revoked.

The same evening, diarrhœa commenced, with frequent copious evacuations of fluid, similar to that vomited, which, instead of debilitating the patient, improved the symptoms. By the next morning the abdomen had become softer, the tense condition, which previously existed, had disappeared, and she was freer from pain.

October 7th.—The pulse was reduced to 100; the countenance had improved; there was but little pain; the abdomen was much more flaccid, and altogether the patient was better. There were still copious liquid discharges from the bowels. I could now trace out distinctly, above the umbilicus, a tumor about four inches long and two inches wide, crossing the abdomen obliquely.

November 7th.—After the last date the abdomen gradually diminished in size until the whole enlargement subsided, and only a hard ridge, crossing the abdomen in the locality of the transverse colon, could be discovered beneath the parietes. She gradually emaciated to skin and bone, and became almost a perfect skeleton. I never saw so thin a living body. She died on the above date, apparently from pure inanition, as nutrition seemed to have been suspended for some time.

An autopsy was made the same evening. On opening the abdomen, the cavity of the peritoneum appeared to constitute a single cyst. The bowels were glued together into one mass and held tightly to the spine by a contracted mesentery. They were snuff-colored in appearance, and the peritoneal surface was covered with small tubercles. The peritoneum lining the walls of the abdomen was studded with an immense number of small, yellowish tubercular points; indeed, every part of this membrane was similarly affected, even that portion forming the external covering of the liver. The peritoneum was also thickened. The omentum was contracted and drawn up tightly, so as to seal the colon to the stomach, and was as hard as gristle. It was this that constituted the tumor or ridge above the umbilicus.

c. Case XVII.—*Ascites, following tubercular peritonitis, simulating unilocular ovarian dropsy; autopsy.* March 23d, 1850, I visited Mrs. J. B., of West Philadelphia. She was twenty-nine years old, and the mother of two children. Previously to my visit she had been suffering with acute pain in the abdomen, followed by sudden enlargement of this region. The increase of size was owing to an accumulation of fluid, and it partook of all the characteristics of a unilocular ovarian cyst. Her general health was greatly impaired, much more so than is usually found in encysted dropsy at such an early period in its history. In spite of treatment, the health continued to give way rapidly, the emaciation went on, and the pain and soreness of the abdomen continued.

April 16th, I removed by tapping fourteen pints of straw-colored fluid, which coagulated firmly by heat. The fluid afterwards accumulated only to a slight extent, but she continued to emaciate to an extreme degree, as in the preceding case. In the early part of May an abscess formed in the umbilical region, which opened at the point previously punctured by the trocar. A considerable discharge of a feculent odor took place. This continued until May 31st, when death occurred.

Autopsy. Emaciation extreme. Almost precisely the same appearances were observed in the cavity of the abdomen as in the last case, except that the omentum was not drawn up and thickened.

In the cases of dropsy following tubercular peritonitis, above described, we notice conditions similar to those which are characteristic of unilocular ovarian tumor. The contour of the abdomen in every position of the body was the same, fluctuation and the percussion sounds did not vary in changing the position, the fluid was albuminous, and, after paracentesis, even tumors and ridges were discovered by palpation. In all of these points there was a close correspondence with the symptoms which characterize ovarian dropsy. On the other hand, the origin, progress, and termination of these cases were emphatically marked by the phenomena of acute disease,—such as severe pain, high grade of excitement, sudden effusion, great debility, rapid and extreme emaciation, inanition, and speedy termination in death. Again, the fluid, although albuminous, had not the usual color of ovarian fluid, and did not possess its microscopic appearance.

There are cases of ascites, however, of less acute character, depending upon visceral obstruction, which may strongly simulate unilocular ovarian dropsy, not only in the physical phenomena, but also in the vital condition. The general health is less impaired. The intestines, from some cause or other, cannot be detected floating upon the fluid in the cavity of the abdomen. It may be necessary even to resort to repeated tapping before a correct diagnosis can be arrived at. The following cases well illustrate these facts:

d. CASE XVIII.—*Ascites, depending upon an indurated liver, strongly resembling unilocular ovarian dropsy.* July 30th, 1861, I was requested by Dr. N. Rauch to visit, in consultation with him, Mrs. N. A., aged fifty-five years. Menstruation, which occurred at a very early age, had always been regular, never painful, nor profuse. She has borne six children and has had one miscarriage; has nursed her children over one year, and has had good lactation. The menses always returned about one month after parturition. In 1852 she was troubled with palpitation and dyspnœa, and one year after she had an attack of inflammatory rheumatism, which lasted three or four months. One year after this she had a similar attack, accompanied by œdema of the lower extremities and ascites. The œdema subsequently diminished in the lower limbs, but the ascites persisted. The abdominal enlargement began in the central lower portion.

At the time I saw her the lower extremities were œdematous, the abdomen was much enlarged, globular, and symmetrical. The percussion sound was resonant over the epigastric, hypochondriac, and right lumbar regions, and was dull everywhere else. It was not resonant over the most elevated points of the abdomen, when the position of the body was changed, as is usual in ordinary ascites. While lying on the left side, the intestinal resonance could be detected in the right lumbar region, as if the bowels were crowded into that locality, just as is sometimes found in cases of ovarian tumor. No nodules, ridges, or unevenness could be detected anywhere. Fluctuation was remarkably distinct at all points. The abdomen was quite elastic and resilient. All the usual characteristics of a thin, unilocular ovarian cyst were well marked.

The pelvis was free, the uterus occupied a central position, the sound entered two and a half inches, and indicated by its mobility that the uterus had no close attachments to any tumor.

The patient was tapped, and twenty-three pints of transparent, yellowish fluid, tinged with green, were removed. Heat coagulated this fluid into a firm, white mass, which was so solid that the spoon containing it could be inverted without displacing it. After the tapping, the abdominal wall receded, except over the left hypochondriac and epigastric regions, which seemed to remain elevated in consequence of flatus in the stomach. The fluid, as it stood in the bucket in the sunlight, exhibited a beautiful rich greenish tinge.

September 4th.—I tapped the patient again, and after the tapping the outlines of an enlarged liver were traceable below the edge of the ribs, the anterior edge being indurated and thickened, and somewhat nodulated. Three subsequent tappings were followed by similar results. The diagnosis now made was ascites depending on disease of the liver.

c. Case XIX.—*Ascites, resulting from hypertrophy of the liver, partaking of the character of unilocular ovarian tumor.* March 12th, 1865, I examined Mrs. N. J. S., forty-seven years of age. The menses appeared at the age of fourteen years, but she was never regular until after marriage. At the age of fifteen she had an attack of hæmatemesis, which lasted thirty-six hours, and produced great prostration. Afterwards, she was bled every month regularly for thirty-seven months, during which period the menses did not appear. Subsequently, she had eight attacks of hæmoptysis, the last one three years before I saw her. She was also troubled occasionally with cough. She was married at the age of nineteen, and had eight children, the youngest being then eight years old.

She first noticed, low down in the right side, an elastic tumor, which she described as resembling the arm of a child. It was movable. This tumor gradually increased in size until it finally disappeared in the general abdominal enlargement.

The abdomen was much larger than that of a woman at full period of pregnancy. It was soft, elastic, uniform in shape, and free from nodules and ridges, and distinctly fluctuating everywhere. When lying on her back, the percussion sound was resonant over the epigastrium; but dull elsewhere. When on either side, it was resonant over the opposite hypochondriac region, and dull at all other points.

The uterus was central, the os open, but the sound could not be made to enter. The vagina was much relaxed.

The diagnosis was uncertain. The indications were that the abdomen was occupied by a cyst, extending up to the lower part of the epigastric region, and above that by ascitic fluid, which floated the intestines.

March 19th.—I tapped the patient of twenty-seven pints of transparent, olive-colored fluid, which formed a whitish coagulum when boiled. To my surprise the whole lower portion of the abdomen receded, while the epigastric and right hypochondriac regions remained prominent. The percussion sounds were now reversed,—the latter regions returned the dull, and the former, the resonant sounds. The outlines of an enlarged liver were readily traced, particularly its left lobe. It was not indurated, but was tender on pressure.

After the tapping, the diagnosis was ascites, with hypertrophy of the liver.

She was tapped five times after this, and at one of the tappings the fluid was of a dark coffee color.

Before the fourth tapping my brother made an examination, and the condition of things so strongly resembled encysted dropsy, that he—without being informed of the results of paracentesis—pronounced it a case of ovarian tumor.

C. **Ascites, resembling multilocular ovarian dropsy.** —The above observations refer exclusively to the differential diagnosis between ascites and unilocular ovarian cysts, and do not apply to multilocular ovarian tumors, which are readily distinguished from ascites. There are, however, forms of ascites, depending upon visceral hypertrophies, which have frequently been mistaken for polycystic ovarian tumors, and, therefore, must be studied before leaving this part of the subject. Were the surgeon always able to examine these cases in their incipient stages there would seldom be much difficulty in arriving at a correct conclusion, as the organs interested in the production of these two forms of disease are usually at opposite points of the abdominal region, and could be readily detected before accumulations would mask their distinguishing features. This, however, is seldom the case, and we must make our diagnosis when the disease is in full development. In all of these cases, in tracing out the early history of the disease, we must bear in mind the observations heretofore made, in reference to the diagnostic value of the accompanying general health. It is worthy of remark, also, that the ascites occurring, as in these cases, merely from obstructed circulation, involves a very different pathological and physical condition from that arising from acute peritonitis. The intestines, instead of being glued together and bound down to the spinal column by a rigid and contracted mesentery, are allowed to float upon the surface of the fluid, and hence we may have resonance on percussion, in this form of ascites, at points where it could not exist in multilocular ovarian disease.

a. Case XX.—*Ascites, caused by a hypertrophied liver, resembling multilocular ovarian dropsy.* December 10th, 1847, Mrs. W. W., of Lehigh County, Pennsylvania, consulted me for a dropsical affection. She was married in June, 1846, and had a child at full period one year after. Before parturition her lower limbs were much swollen. The delivery was natural, but no lactation followed. The swelling of the limbs subsided afterwards, but again returned in two weeks. A week after this the abdomen began to enlarge in the centre. Menstruation never returned after the birth of the child. About twelve years before she had an attack of inflammatory rheumatism, and subsequently of pneumonia, which was followed by increased action of the heart, which has continued ever since.

At the time she visited me there was considerable abdominal enlargement. The form was globular, particularly when in a sitting posture. In this position, as well as in the recumbent, on either side, resonance on percussion was absent. But when lying on the back, resonance was present on each side at a point rather below the umbilicus and extending towards the lumbar regions. There was a dull percussion sound over the hypochondriac, epigastric, and umbilical regions, and for some distance below Fluctuation was very distinct in all directions, but particularly above the umbilicus. When the patient was lying on her back, upon making sudden pressure with the points of the fingers, just above the umbilicus, to the right of the median line, a layer of fluid was displaced, beneath which a solid tumor could be detected, and which could be traced downward. In a sitting posture, this tumor could be traced down nearly to the pelvis on the right side, and also across the epigastrium to the left. There was no tenderness on pressure.

A subsequent examination was made in company with my uncle, Dr. Edwin A. Atlee. The uterus was elevated in the pelvis, the os and cervix were quite small, and apparently shrunken,—indeed, the contour of the organ could not be distinctly made out. With the speculum, the os tincæ was observed to be very small, as if atrophied, and was covered with warty excrescences on the external surface. The sound entered two and a half inches. The vagina was perfectly healthy.

There was valvular disease of the heart, with a distinct bruit de souffle associated with the first sound. A scrofulous ulcer existed in the nose, which had perforated the vomer to the extent of half an inch.

By medicinal treatment the dropsical fluid was rapidly carried off through the kidneys, leaving very manifest a hypertrophied liver. This subsequently diminished in size, and the patient returned home in comparatively good health.

In August, 1849, Mrs. W. was confined with her second child, and this parturition, like the first, was followed in two weeks by œdema of the lower extremities, from which, however, she recovered without it being accompanied by ascites.

In February, 1852, she had her third child, and subsequently had a return of all the original symptoms, and came under my care again six weeks after. Treatment again relieved her, and she returned home in a pretty good state of health. After that I did not hear of her.

b. Case XXI.—*Ascites, accompanied by hypertrophy of the liver, and disease of the heart and kidneys, resembling multilocular ovarian dropsy; autopsy.* August 3d, 1856, I visited Miss H. L. E., aged forty-four years. She never had enjoyed robust health, and during the whole of the preceding winter she had been more unwell than usual. In the month of April she had an attack of pneumonia of the left lung, accompanied by swelling of the ankles. As she recovered from this, the kidneys, liver, and heart became disordered, the whole body œdematous, and fluid accumulated in the cavity of the abdomen. She also had attacks of syncope and became greatly debilitated. Professor Samuel Jackson was her physician, and Dr. Casper Morris was visiting with him in consultation.

I was first called to see Miss E. at midnight, as she was supposed to be dying, and both of her physicians were out of town. She was sitting up in a chair, panting for breath, almost pulseless,—the pulse not capable of being counted, owing to its frequency and indistinctness; her hands and wrists were cold and clammy, the sounds of the heart were confused, and the jugular veins pulsated in a very marked manner. I also thought she was dying, and immediately ordered her to be freely stimulated with brandy, and to have sinapisms applied to the stomach and extremities. The urine was very scant, not exceeding a wineglassful in twenty-four hours, which had been the case for weeks. I was informed that she had not occupied a recumbent posture for several weeks, sitting up in a chair day and night. She was enormously enlarged, and her lower limbs were ready to burst, the skin being of a purple hue. They had been previously incised to allow the fluid to escape.

The urine was tested. It contained a large proportion of albumen, and also tube casts, indicating Bright's disease.

The stimulants having, contrary to expectation, sustained her for forty-eight hours, I proceeded to place her under curative treatment, and, in the course of a fortnight, produced gentle ptyalism, at which period the secretion of the kidneys increased to the amount of one or two pints daily, the swelling diminished, the pulse became fuller, slower, and more regular, so as to get below one hundred, the action of the heart was more defined and normal, the pulsations of the jugular veins were less marked, respiration was deeper and more tranquil, while the patient was capable of occupying a semi-recumbent position in bed.

The lower extremities being still greatly enlarged, bandages were applied with the effect of reducing their size, but failed in entirely removing the swelling. Notwithstanding the patient was greatly improved, yet she had arrived at a stationary point, beyond which I could not get her. The secretions of the kidneys continued to be copious, and free from the former evidences of Bright's disease, but still there remained considerable effusion into the abdominal cavity and in the cellular tissue.

Fluctuation was distinct throughout the whole abdominal region. Percussion was dull over the epigastric, both hypochondriac, umbilical, and right lumbar regions; while at other points it elicited scarcely a semi-resonant sound. By making deep and sudden pressure in the dull regions, the fingers came against a solid body beneath the stratum of fluid which covered it. A change in the position of the body did not alter the character of these phenomena.

In consequence of this condition of things I tapped her, on September 10th, removing twelve pints of transparent, cider-colored fluid, which on exposure to air soon deposited strings of coagulated fibrin. After the fluid was withdrawn, a considerable enlargement of the abdomen still remained, which was now ascertained to be dependent upon a greatly enlarged and indurated liver. The patient bore the operation well.

A portion of the fluid was handed to Dr. Drysdale for examination, who reported as follows:

"A thin, transparent, pale straw-colored fluid, containing a small coagulum of fibrin.

"*Chemical examination.*—Neutral, specific gravity 1016. Acetic acid caused no change in appearance.

"*Microscopic examination.*—A perfectly clear fluid, almost free from solids. After repeated examinations, a single exudative cell could be seen, together with a few shrunken epithelial cells and a small mass of coagulated fibrin."

The treatment was continued and she rapidly improved; all swelling of the limbs subsided, the pulse gradually came down to eighty, was full and regular, the action of the heart was much more normal, the jugular veins ceased pulsating, and the breathing became easy. The patient slept in a recumbent posture, rode and walked out daily, and ate well,—so that by the middle of November following she was in comparatively good health; the liver was so reduced in size as to project but a small distance beyond the edges of the ribs.

For several years after this the patient enjoyed variable health, sometimes being well enough to take exercise in the open air,—the dropsical effusion being kept in check by medicinal treatment. During the winter of 1860–61, however, the secretion of the kidneys diminished in amount, while the accumulation of fluid in the limbs and abdomen again occurred. The disease now resisted all treatment, and the vital powers failed rapidly. With the hope of alleviating suffering and prolonging life, I tapped her again, on the 23d of February, 1861, removing thirteen pints of cloudy, straw-colored fluid; but she continued to sink, and died next day.

Autopsy was made twenty-six hours after death. The abdominal cavity contained evidences of old and recent peritonitis. The peritoneum lining the parietes and covering the liver presented a very peculiar appearance: it was thickened, and filled with marks of indented cicatrices, resembling very much the pits left by confluent smallpox. It had also a dark-brown or mahogany color, particularly over the left wall of the abdomen and in the pelvis. The liver was enlarged, quite brittle, and its interior of a pale-yellow color. The kidneys were very much congested, the right one occupied by round, shot-like particles of lithic acid, and both had undergone fatty degeneration. The bladder was empty. The uterus and ovaries were healthy, although old peritoneal pelvic adhesions existed. The heart was much diseased. It was greatly enlarged, and the left ventricle was loaded with fat. The right auricle was dilated to three or four times its normal size, and its walls, at some points, were as thin as paper. All the valves were diseased, particularly the mitral and tricuspid. The mitral orifice was so constricted as to constitute a mere chink. The position of the heart was also changed, so that the right auricle was adherent to the diaphragm and the apex pointed upward. Its long axis, instead of being oblique, was horizontal.

c. CASE XXII.—*Ascites, depending upon hypertrophy of the liver, simulating multilocular ovarian dropsy; diagnosis decided by tapping.* March 25th, 1859, I visited Mrs. W. S , in company with Dr. Burpee. She was about thirty years old, and menstruated at an early age, regularly, but in small quantity. She was married at the age of eighteen years, and had two children, the youngest being then nine years old. After marriage, menstruation became irregular, being suspended at times for five or six months. The quantity of the discharge was always small, and the duration was only one or two days. In July, 1855, the menses stopped entirely, after which her abdomen began to enlarge and she supposed herself pregnant. She made every preparation for her accouchement, and at the end of nine months, having a *show*, she expected approaching parturition, but was disappointed. The menses never afterwards returned, and she continued to increase in size. She, however, was treated for "false conception" by one physician, and two others, of excellent reputation, who examined her, supposed she had an ovarian tumor, and referred her to me.

The patient was greatly enfeebled, the breathing labored and hurried, and she could not lie down with her head and shoulders low. The pulse was extremely feeble, and counted one hundred and four to the minute. The skin of the face and hands had a deep purplish hue, resembling that of a person asphyxiated, and the capillary circulation was very languid. The bowels were constipated, the urine was highly colored and passed only once a day in very small quantity. Urination was painful and accompanied by a sense of obstruction. The feet and legs were very much swelled, and the abdomen was enormously enlarged, partly by œdema of the walls.

When the patient was examined in a supine position, the sound elicited by percussion over the abdomen was dull everywhere; but when she was placed on the side, the intestinal resonance of the ascending and descending colon could be detected. Very little variation in form followed different changes in the position of the body. Nothing abnormal was detected by the vaginal examination, except that the vagina was small; the sound entered the uterus two and a half inches. Although a small woman, she measured round the umbilicus forty-nine inches, from sternum to pubes twenty-six inches, and across the abdomen, between the two superior spinous processes of the ilium, thirty inches.

Not being able to form an opinion of the nature of her disease I proposed to tap her, both for the purpose of clearing up the diagnosis and to relieve her of suffering. Forty-seven pints of yellow-colored, slightly greenish, transparent fluid, resembling thin serum, were drawn off. The withdrawal of the fluid was not followed, as is usual in simple ascites and peritoneal cyst, by the incurvation of the walls of the abdomen. This was accounted for, in a measure, by the œdema of the abdominal walls. The epigastric and hypochondriac regions were occupied by an indurated mass, which was thought to be a hypertrophied liver.

The dropsy not proving to be ovarian, the patient was placed under medication, and recovered a good share of health, so as to attend to her ordinary household duties. As she resided at too great a distance, I afterwards lost sight of her.

I have thus given the details of three cases of abdominal dropsy, which, in inexperienced hands, might have been mistaken for ovarian tumor, and, even in the practice of one of larger experience, could not readily be distinguished without the aid of paracentesis. On the removal of the fluid, however, either by medicine, or by tapping, the hypertrophied organ can be easily detected, and the nature of the disease made out; or should this not be the case, the nature of the fluid may be designated by its physical, chemical, and microscopical characters. Therefore, as a means of diagnosis alone, apart from its therapeutical value, tapping assumes a position of great importance.

D. **Ascites, coexisting with ovarian tumor.**—Ascites may also coexist with ovarian tumor,—so that the former may entirely mask the latter, and the latter, at other times, may destroy all the peculiar characteristics of the former. Encysted or solid tumors, which are surrounded by a superficial layer of ascitic fluid, can readily be detected by suddenly displacing the fluid with the points of the fingers, which, impinging against the deeply-seated tumor, at once recognize the existence of a more solid body. This, however, will not enable us to decide upon the nature of such a tumor. If the tumor be submerged within a large quantity of fluid, so as to be removed some distance from the abdominal wall, this test cannot avail us, and the real condition of things is only to be discovered by a removal of the fluid either by medication or paracentesis. For an example of this kind I may refer to Case II., under the head of General Diagnosis, and for further illustration of the above observations I will relate the following cases:

a. CASE XXIII.—*Ascites associated with an ovarian cyst; the peritoneal fluid drawn off several times by paracentesis; the tumor subsequently extirpated.* March 18th, 1850, in company with Prof. Grant, I visited Washington City, D. C., to see Mrs.

S. L., in consultation with Dr. J. C. Hall and Prof. T. Miller of that city. She was forty years old. Her first menstruation occurred at the age of fourteen, and the last in May, 1849. It was always regular, continuing one week, and always painful and clotted. She had never conceived. For fifteen years she had attacks of asthma every spring and fall, lasting about two months.

She thought her disease commenced in 1836, at which time she suffered greatly in her back. Afterwards she experienced an unpleasant sensation, like threads being torn asunder, deep in the right inguinal region, and which was relieved by sitting down. About the same time, her abdomen began to enlarge, but she was not aware that one side was larger than the other. The abdomen gradually increased in size, without producing any discomfort, until May, 1849, when, two days after riding to Mount Vernon, the patient was seized with very acute pain in the epigastric and right hypochondriac regions. The attack was so severe that she could not bear the slightest touch, not even the weight of clothing. She was very ill for several weeks under the care of Dr. Hall, who had her cupped over the spine and blistered over the stomach. After this, fluid began to collect in the cavity of the abdomen, and during the same summer her feet began to swell. She became so much enlarged and oppressed that tapping was resorted to, about the 10th of December, 1849, removing four gallons of clear fluid from the peritoneal cavity. January 23d, 1850, she was again tapped, and this time five gallons of blood-stained fluid were removed. February 2d, six gallons of fluid, similar to the last, were drawn away, and March 2d, a fourth tapping removed six gallons more of clear fluid. Dr. Hall stated that after each tapping there still remained a large, uneven, hard, solid tumor within the abdomen. A week before the last paracentesis her feet and legs became so much distended that the skin ulcerated, giving exit to a large quantity of serum, which was still constantly discharging.

Although she had been tapped only sixteen days before I saw her, the abdomen was enormously enlarged. It was symmetrical in shape. The percussion sound was dull everywhere. Fluctuation was very distinct, the sensation being that of a thin fluid. By pressing suddenly into the abdomen with the ends of the fingers, and thus displacing a layer of fluid of one, two, and three inches in depth, a deeply-seated tumor could readily be felt. No position taken by the patient had any influence in altering the contour of the abdomen, or in affecting the character of the percussion sounds.

At my request, Drs. Hall and Miller tapped the patient of about two gallons of bloody water, after which I examined her again. The abdomen still remained very large, the most projecting parts being in front and in the right hypochondrium. The enlargement was well defined, smooth over the surface, and slightly uneven. Instead of being a solid growth, as had been supposed, it evidently was a cyst, containing a dense fluid, which could readily be fluctuated. The attention of Drs. Hall and Miller was particularly directed to this fact, and they at once coincided in opinion.

The uterus was in the proper position, and in a healthy condition, and did not seem to be implicated seriously with the tumor. The sound entered only one and a half inches.

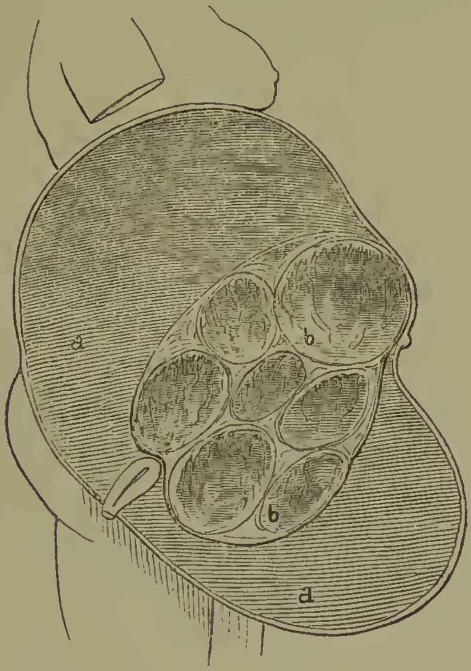
I had no hesitation in making a diagnosis:—ascites coexisting with an ovarian tumor. This was proved by performing ovariotomy the next day. The cyst contained twenty-one pints of very dark chocolate-colored, albuminous fluid, of the consistence of soft-soap, which coagulated by heat.

In this complex case of ascites and ovarian dropsy there existed all the physical signs which are characteristic of ovarian disease alone, and it was impossible to diagnose the exact state of things, in the fully distended abdomen, without the aid of paracentesis. There were presented fluctuation and dull percussion sounds over the whole abdomen, an unchangeable contour of the abdomen in various positions of the body, and all the peculiarities belonging to a unilocular ovarian cyst. The fluid, however, that was removed, was peritoneal, proving the existence of ascites, and thus far corrected the original diagnosis; while, at the same time, its removal disclosed a large submerged tumor, which, on examination, proved to be a cyst; even had ovariotomy been omitted, the puncture of that cyst by a trocar would alone have proved the tumor ovarian by the character of the contained fluid. Here, the ovarian tumor, by crowding back the intestines, and preventing them from floating on the fluid contained in the peritoneal cavity, destroyed the physical signs which accompany ascites, while, on the other hand, the presence of the ascitic fluid obscured all traces of the ovarian cyst. Tapping, therefore, in this instance, as in many other cases, was an essential means of diagnosis.

b. Case XXIV.—*Ascites, coexisting with a multilocular ovarian tumor; diagnosed before tapping; the tumor removed.* March 16th, 1864, while on a visit to Lock Haven, Pennsylvania, my attention was called to the case of Mrs. P. L., of Shippen, Cameron County, Pennsylvania, who had arrived that far on her way to Philadelphia. She was forty-two years old. Menstruation commenced at the age of sixteen years, and had always been regular. She had borne twelve children and had miscarried three times. Her last confinement was in November, 1861. While pregnant with her last child she suffered severe pain in the right inguinal region, and after parturition she noticed a tumor, as large as an egg, occupying this region. On the 18th of April, 1862, she was seized with severe pain in the tumor, and in the three days following it seemed to develop all at once, so that it stuck up "like a tin cup," reaching two-thirds across the abdomen, and "was as large as a two-quart pail." It was treated actively by medicine and blistering and its growth for a time was arrested. Afterwards, however, the tumor was observed to increase in volume, but more slowly, and by the fall of 1863 it had assumed a pretty large size; her general health also had become so much impaired that, by the advice of her physician, she visited Philadelphia to seek surgical aid. She said that Professors Gross, Pancoast, and Wallace had examined her in the clinical ward of Jefferson College, and had declined to perform any operation with a view to its removal.

I examined the patient on the above date. She was greatly emaciated, cachectic, and debilitated. The abdomen was very large, and its contour was altered by a change of position. When in a supine posture a marked protuberance was noticed just above the umbilicus. On palpation this was discovered to be caused by the upper end of an oblong tumor. It was hard, but less resisting and less solid than a fibroid. To the touch it felt like a multilocular ovarian tumor, composed of numerous very small cysts. The tumor itself was movable within the abdominal cavity in all directions. The parietes of the abdomen were in close contact with this terminal end of the tumor, and, indeed, stretched over it. At every other point except that above mentioned the abdomen was soft, elastic, and fluctuating, indicating that its cavity also contained a thin fluid. Percussion distinctly showed that the fluid was in the peritoneal cavity, and surrounded the solid tumor. Sudden and deep pressure, in the lower part of the abdomen, displacing the fluid, detected the tumor in this portion of the cavity.

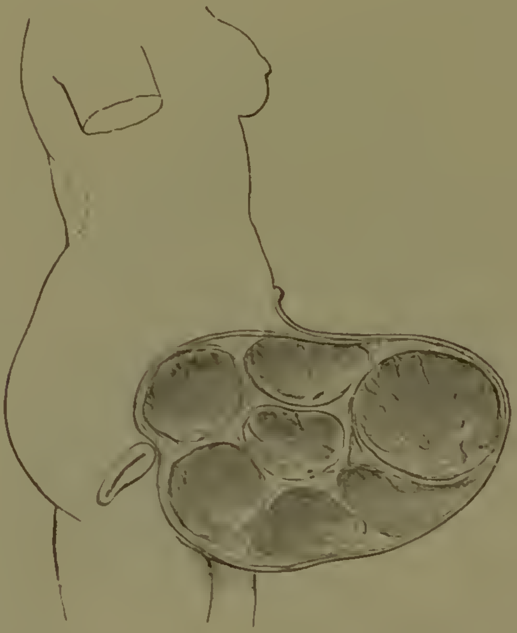
Fig. 7.



a, a. Ascitic fluid.
b, b. Multilocular ovarian tumor.

I introduced the trocar about four inches below the umbilicus and drew off twenty-eight pints of dark-yellow, transparent fluid, containing some fibrinous flakes. It was firmly coagulated by heat. After tapping, the abdominal wall receded so as to embrace the tumor closely, and the latter projected in a very singular manner. Figures 7 and 8 represent the appearance of the abdomen both before and after tapping.

Fig. 8.



Diagnosis.—Multilocular ovarian tumor accompanied by ascites.

March 30th, I removed the tumor, and the diagnosis was confirmed.

c. Case XXV.—*Ascites, coexisting with a multilocular ovarian tumor; the fluid in the peritoneal cavity decided by the microscope to be ovarian; the patient tapped fifty-eight times; ovariotomy; autopsy.* May 15th, 1860, I examined Mrs. J. C., of Catasauqua, Pennsylvania. She was thirty-five years old. Menstruation commenced at the age of fifteen. She had one regular return, and then, in consequence of exposure to cold, there was a suspension for two or three months, after which it continued to be regular. Sometimes the discharge was clotted. Its duration was three days. She married at the age of twenty-five, had three children, the youngest being five years old. Her parturitions were easy, and recoveries were good. Lactation was free. Until this disease made its appearance she had always enjoyed good health.

She dated the commencement of her trouble from March, 1856; and the following May she noticed that the abdomen was growing larger. The increase was gradual, not confined to any particular region, and was not accompanied by any œdema of the lower extremities. Dr. Martin, her family physician, considered her pregnant, but upon making a subsequent examination concluded that she was suffering from dropsy. In July, 1856, thirty-two pints of fluid were removed by tapping. Eight weeks afterwards she was tapped the second time. Up to the time that I saw her, she was tapped fifty-seven times. The longest interval between the operations was eleven weeks. One year before, the average intervals were four weeks, afterwards every three weeks, and then every two weeks. The last tapping was on the 7th of May. The largest quantity of fluid removed at one operation was sixty pints. At first the fluid drawn off had a dirty-brown appearance. Afterwards it was cider-colored, and was always transparent. After the tenth tapping a tumor was noticed in her left side, which steadily increased in size. This tumor, she said, was quite movable after paracentesis, was just beneath the skin, and seemed as if it would roll out if the skin were opened.

She continued to menstruate regularly for two years after the commencement of the dropsy, then menstruation became irregular, and the flow was scanty. She had her menses the last week in April. On examination, I found her tongue red and glazed, her pulse was 114, and weak. There was extreme emaciation, decided cachexia, and the skin was tinged yellow. The urinary secretion was very small.

Notwithstanding she had been tapped only eight days before, her abdomen was quite large from the accumulation of fluid. When lying on her back, the percussion sound was resonant in the umbilical and epigastric regions, and dull elsewhere. When on her right side, the resonant sound was transferred to the left side, and *vice versa*. The lower portion of the abdomen was dull on percussion, the upper portion was resonant. Fluctuation was distinct everywhere. These signs indicated the presence of fluid either in the peritoneal cavity or in a cyst containing air.

By palpation a tumor could be felt surrounded by fluid. By sudden pressure, here and there, the fluid could be displaced, and the fingers would impinge against a tumor at different depths. The distance from the abdominal wall was greatest along the linea alba, and least along the left side. It could not be detected in the right side. In the left inguinal region the tumor was quite superficial, and presented an angular surface.

On attempting to make an examination per vaginam, I encountered a body obstructing the passage. It proved to be a large flannel ball, used as a pessary to keep the parts from protruding, and to enable the patient to walk with comfort. After removing this I found the walls of the vagina greatly relaxed. The uterus was elevated above the pubes, but its mouth was easily reached by the finger. The sound entered nearly three inches in a central direction, and its point could be felt about three inches above the symphysis pubis. On moving the tumor, motion was communicated to the sound, but this seemed to have been caused by the pressure of the tumor against the uterus, rather than by a union between the two. The uterus appeared to be healthy.

The next day I tapped the patient, the fifty-eighth tapping, removing thirty pints of fluid. It was semi-transparent, resembling thin starch-water, partially coagulable by heat, and turned white in boiling.

After the fluid had escaped, a large tumor could be seen occupying the left side of the abdomen, round in form, slightly uneven over its surface, semi-elastic to the touch, quite movable, weighty when lifted by the hand, and free from soreness on handling. The tumor seemed to be covered with ridges, which could be grasped and lifted from it. The fundus of the uterus was recognized immediately below the tumor, and was closely in contact with it. The sound being introduced, it was decided that the tumor had a pedunculated attachment to the uterus.

A portion of the fluid was examined by Dr. T. M. Drysdale, who reported as follows: "This fluid resembles a thin mucilage of gum arabic, slightly opaque and white.

"*Chemical examination.*—Alkaline. Specific gravity 1010. A boiling heat coagulated it, and rendered the fluid milky, but did not solidify it. Acetic acid caused a cloudiness.

"*Microscopic examination.*—Delicate epithelial cells, and granular cells, the last in great abundance."

May 21st, I examined the patient again. There had been a rapid accumulation of fluid, and there was every indication of it being in the cavity of the peritoneum, although the fluid drawn by tapping was unlike that of ascites, and, as above shown, had all the characters of the contents of an ovarian cyst. Could the tumor itself have thrown out the fluid into the peritoneal cavity? The resonant sound on percussion was found over the most elevated part of the abdomen in every change of position of the patient; and when on her back, the convolutions of the intestines were plainly seen in the upper portion, giving a corresponding undulation to the abdominal walls. This, also, led me to decide that the fluid was in the cavity of the peritoneum, and that the above phenomena were not caused by air having gained access to the interior of a cyst.

The diagnosis, therefore, in this case was an ovarian tumor, with an opening in its walls, which allowed the contents to escape into the cavity of the peritoneum, and the fluid accumulating there, produced all the characteristic phenomena of ascites.

May 24th, ovariotomy was performed. The diagnosis was confirmed in every particular. The fluid was found to be in the peritoneal cavity. The tumor was ovarian and multilocular, and its envelope contained several openings, through which the fluid had escaped.

This patient died from exhaustion on the second day after the operation. Twenty-four hours after death a post-mortem examination was made. The wound had adhered together throughout its whole length. The cavity of the abdomen was entirely free from inflammation, and there had been no hemorrhage. The peritoneal surfaces, visceral and parietal, were covered with miliary cancerous deposits. The appendiculæ epiploicæ were contracted and indurated by cancerous matter. The tumor also had a decidedly encephaloid appearance. And the microscopical examination of it revealed large numbers of cancer cells.

d. Case XXVI.—*Ascites, accompanying a multilocular ovarian tumor; ovariotomy; afterwards the fluid in the peritoneal cavity proved by the microscope to be ovarian; sixteen months after, the other ovary removed by an operation.* October 10th, 1862, Mrs. M. L. S., of Rochester, New York, visited Philadelphia to consult me. She was forty-two years old. Menstruation commenced at the age of fifteen, at which time she took a severe cold, which suspended it for eleven months. During this period her health failed, and she became anæmic, weak, emaciated, and troubled with cough, so that her friends thought she had pulmonary consumption. Various plans of treatment were pursued, principally domestic, and at the end of eleven months the menses reappeared, but continued to be irregular, the intervals being four, six, and eight weeks. At the age of twenty-two years a tumor two inches in diameter, and which had existed for one year, was excised from the right breast. Afterwards a bruise caused another, which disappeared. She married at the age of twenty-six years, and had two miscarriages at an early period, induced by herself in order to avoid child-bearing. Subsequently she had one child. The parturition was easy. She nursed the child two and a half years. After parturition, menstruation recurred more regularly, continued so until her fortieth year of age, and then again became irregular.

In July, 1850, she had a severe attack of inflammation in the lower part of the abdomen, which confined her to bed for five or six weeks. She had several similar attacks up to 1860, but not any after that.

In October, 1861, she first noticed an enlargement of the lower part of the abdomen. This increased, and she consulted Dr. Whitbank, of Rochester, in December. He placed her under treatment for dropsy, and in three months the effusion disappeared, leaving a tumor in the right inguinal region.

He described it as a hard mass surrounded by a cyst-like elastic body, about six inches in diameter. She thought that she noticed the tumor before the effusion in the abdomen occurred, and that it was so movable that she could feel it roll from side to side as she turned in bed. Soon after the fluid had been absorbed, it again accumulated, and she continued to increase in size up to the time I saw her.

On examination, I found the patient to be nearly as large as a woman at full term of pregnancy. The abdomen was uniform in shape, soft, and elastic, and fluctuation was evident throughout its whole extent. Its most elevated points, no matter in what position of the body, returned a resonant sound on percussion, while the lower points were dull. These signs indicated the presence of fluid in the cavity of the peritoneum. On making sudden and deep pressure with the ends of the fingers on the abdomen below the umbilicus, so as to displace the superimposed fluid, a tumor, more or less solid and uneven, could be felt from one to two inches below the surface. So far as could be distinguished, it appeared to be a multilocular tumor.

The pelvis was capacious, and free from all evidences of the presence of the tumor. The uterus occupied the posterior part, and was quite movable. The os tincæ was open, and the sound entered three inches.

October 17th, I visited Rochester for the purpose of removing the tumor. At the patient's residence I met Drs. Dean, Armstrong, Moore, Ely, Montgomery, Briggs, Collins, Pratt, Miller, Avink, and Endress, to whom the following statement respecting the diagnosis was made: I diagnosticated a multilocular ovarian tumor occupying the lower portion of the abdomen; it was submerged in a large quantity of fluid; the fluid in which it was submerged either originated from an interruption in the venous circulation in consequence of the pressure of the tumor, or it occurred as the result of a leakage in one of the cysts of the tumor, and the character of the fluid would decide this question.

The operation was performed. A large quantity of dark-yellow fluid, having an olive tint, was drawn from the cavity of the peritoneum, and a multilocular ovarian tumor was removed; on examination it was found to be darker than the ordinary ascitic fluid, which is more of the cider color, was highly albuminous, and was filled, as shown by the microscope, with the peculiar ovarian cell. The operation clearly proved that this was not a case of pure ascites, but was an accumulation in the cavity of the peritoneum occurring in consequence of an escape of fluid from the rupture of the ovarian cyst, as proved by an examination of the tumor after its removal. It afforded another instance of the failure to cure ovarian dropsy by discharging the contents of the sac into the abdominal cavity.

Sixteen months afterwards, I extirpated the other ovary, although it was apparently healthy at the time of the first operation.

In making the diagnosis in these complex cases of coexisting diseases, paracentesis comes in as a most efficient aid. The collapse of the abdominal walls will enable us afterwards to recognize any visceral hypertrophy, and detect the folded walls of a cyst; while the chemical and microscopical examination of the fluid drawn will clear up all doubt as to its character and source.

e. CASE XXVII.—*Ascites, coexisting with a multilocular ovarian tumor; tapped forty-seven times from the* 15*th of October*, 1868, *to the* 12*th of October*, 1871; *total amount of fluid removed three thousand two hundred and eighty-eight pints; fluid ovarian, having escaped into the abdominal cavity through an opening in the tumor.* October 12th, 1871, I visited Miss M. A. A., near Emlenton, Venango County, Pennsylvania. She was forty-four years old. Menstruation commenced at the age of thirteen; had always been regular, and had never been painful until she became dropsical.

October, 1864, the patient noticed a fullness in the lower portion of the abdomen, which was greater on the left side. She continued to enlarge, and was thought by her medical attendants to be pregnant. In the fall of 1867 the abdominal parietes gave way at the umbilicus and considerable fluid was discharged, and continued to escape for several days.

Dr. B. S. Hamilton, of Emlenton, was called to see her in consultation with Dr. Wallace, of Brady's Bend, on the 16th of October, 1868. He "found her general health much impaired; there was great emaciation; sallow complexion; an inability to lie down; the bowels were costive; the urine was scanty; and digestion was bad." She was tapped, and eleven and a half gallons of dark reddish-brown fluid were removed. Dr. H. tapped her again on the 30th of November, taking away ten and a half gallons of fluid, after which he detected a solid tumor in the left inguinal region about the size of an ordinary placenta. The tappings were very often repeated, and the tumor, after remaining stationary in size for some time, gradually increased.

Although the patient had been tapped only one week before I saw her, she was enormously enlarged, being at least three or four times the size of a woman at the full period of gestation. All the signs of ascites were clearly marked. I could, however, by sudden and deep pressure, detect the presence of a deeply-seated tumor submerged in the abdominal fluid, particularly to the left of the linea alba. The pelvis was unoccupied by the tumor; the uterus was central and movable, and admitted the sound two inches and a half. The patient was then menstruating. At this time she was not cachectic, and the emaciation was not extreme.

Diagnosis.—A non-malignant multilocular ovarian tumor with an opening in the walls, through which the fluid has escaped into the abdominal cavity.

After stating my diagnosis to Drs. Hamilton and Brown, of Emlenton, Gillett and Snowden, of Franklin, and Elliott, of Titusville, I proceeded, with their assistance, to operate. An incision, about three inches in length, was made through the linea alba directly into the peritoneal cavity, and several gallons of a brilliant yellowish oleaginous liquid, loaded with cholesterine, were allowed to run off. After emptying the abdomen of the fluid, I introduced my finger through the incision, in order to ascertain the character of the tumor, and discovered a multilocular ovarian cyst filling up the hypogastric, umbilical, left lumbar, and left inguinal regions. The incision was now enlarged two or three inches. Selecting the largest cyst, it was opened, and a quantity of white, starch-like fluid, as thick as the white of egg, escaped. Through the opening in this cyst I introduced my hand, reduced the size of the tumor by breaking down its central portion, so that I was able to draw it out of the abdominal cavity through the incision made. It was attached to the left side of the uterus by an ordinary-sized pedicle, which was clamped, and the mass removed.

The tumor was afterwards examined, and upon its posterior surface two openings, separated by a commissure, were found, through which the fluid had evidently escaped into the abdominal cavity.

Dr. Hamilton wrote, December 19th, 1871, that "the patient had fully recovered from the effects of the operation, and was in the enjoyment of better health than for years past."

The date and number of the tappings, and the amount of the fluid drawn, are recorded by Dr. H. as follows, each tapping furnishing from four to twelve gallons: October 16th, November 30th, December 28th, 1868; February 7th, March 8th, April 19th, May 19th, June 16th, July 14th, August 7th, September 4th, September 24th, October 29th, November 24th, 1869; January 5th, January 24th, February 17th, March 14th, April 9th, May 2d, May 28th, June 21st, July 18th, August 10th, September 3d, September 28th, October 27th, November 23d, December 15th, 1870; January 9th, February 1st, February 25th, March 19th, April 8th, April 28th, May 18th, June 7th, June 26th, July 13th, July 27th, August 10th, August 27th, September 6th, September 14th, October 4th, October 12th, 1871. Total number of tappings, forty-seven; total amount of fluid, four hundred and eleven gallons.

The foregoing case, besides illustrating the particular point in the text, is most remarkable. From October, 1868, until October, 1871, a period of three years, there was a constant drain upon the system amounting on an average to at least three pounds a day! It is scarcely conceivable that the human system could tolerate such an exhausting tax upon its vital powers.

As a general rule, large accumulations of ascitic fluid do not accompany non-malignant ovarian tumors. It is also a rare occurrence to meet with large collections of fluid in the peritoneal cavity in connection with benign tumors of the uterus. When, however, either form of tumor is malignant, ascites is not unfrequently associated with it. Should a case of ascites, therefore, present itself, occurring in connection with a pelvic or abdominal tumor, particularly one of rapid development, and followed by a speedy diminution of the vital powers, and well-marked cachexia, it should excite strong suspicions that the tumor is malignant, and no attempts should be made to effect its removal. But should we meet with a case, where the general health of the patient continued to be good, even after repeated tappings, as in that just related, and particularly where the fluid gives unmistakable evidences of its ovarian character, we can honestly offer to that patient the resources of surgery.

I am of the opinion that, in most of these cases of excessive accumulation in the peritoneal cavity, associated with a pelvic tumor, where the patient's general health is pretty well maintained, and there is no cachectic condition, the fluid is ovarian in character, and that an opening in the tumor will be found. The secreting vessels of the cyst are relieved from pressure by a break in the cyst-wall, and the capacious cavity of the peritoneum becomes a receptacle of the fluid as fast as it is secreted, thus inviting an increased action in those vessels.

Under this division of the subject I will introduce one more case. Though not one of ascites, coexisting with ovarian tumor, it was so considered by a leading gynæcologist of New York. In a most excellent paper on the "Diagnosis of Malignant Diseases of the Ovaries," read by Professor T. Gaillard Thomas before the New York Academy of Medicine, and published in the *American Journal of Obstetrics* for May, 1871, five very interesting and instructive cases are recorded. The case mentioned in that paper as the fifth came subsequently under my care, and it was not until it had passed from my hands that I was made aware of it having been the subject of a dissertation by Professor Thomas, whose paper I read a few weeks afterwards. I will record the case from my own notes:

f. CASE XXVIII.—*A multilocular ovarian tumor mistaken for a case of "ascites, complicated with ovarian tumor;" tapped six times; ovariotomy.* April 13th, 1871, Dr. W. K. Brown, of Brooklyn, New York, called at my office to consult me about a case of abdominal tumor. From the very intelligent account rendered by him I inferred that it was a case of multilocular ovarian tumor, and requested him, when the case was again tapped, to send me by express a specimen of the fluid. I left soon after for California. During my absence the patient was tapped, a portion of the fluid was received and examined by Dr. Drysdale, and decided to be ovarian. On my return from California on the 3d of June, I found a letter from Dr. Brown urging me to visit Brooklyn to operate on his patient.

June 7th, 1871, I visited Brooklyn to see Mrs. G. She was fifty-five years old. Menstruation commenced at the age of fifteen, was regular, painful, and lasted four or five days. She married at the age of twenty-two years, and had eight children. There was some difficulty in her first and third parturitions. After all of them the recoveries were slow. She nursed each of her children eighteen months and had free lactation. The menses did not return while nursing. During the last menstrual year, which was seven years ago, the menses were irregular and too profuse. A slight show appeared in September, October, and January last.

In September, 1869, she first felt pain in the right inguinal region, and in April, 1870, a tumor was noticed by Drs. Sabine and Brown occupying a central position in the abdomen and inclining to the right side. It was hard. She felt movements like those of a child, and pains resembling labor-pains. Afterwards there were evidences of an accumulation of fluid, at which time she was examined by Professor Thomas. This was on the 24th of November, 1870. She was tapped the same day, and four gallons of dark-green, syrup-like fluid, transparent in a thin stream, but not in bulk, were removed. January 2d, 1871, she was tapped again, a similar fluid, but thicker and more cheesy, was removed. Paracentesis was repeated, February 22d, March 28th, April 22d, and May 15th, altogether six times, the last fluid weighing thirty-two and a half pounds, and coagulating by heat. After each tapping a solid tumor could be detected occupying the right side, circumscribed, movable, and not tender on pressure. This tumor gradually increased in size. She rallied well after all the operations, except the last. During the month of May she emaciated rapidly. Heretofore she had enjoyed pretty good health, and had no hereditary taint.

Soon after my arrival I examined her in company with Dr. Brown. She was much emaciated, and had an abdominal enlargement much greater than a woman at full period of gestation, although tapped three weeks before. The only resonant percussion sound which was detected was in the left hypochondrium, and which was not affected by change of position. The entire abdomen was elastic, and more or less fluctuating, but fluctuation was most distinct throughout its upper portion. No nodules could be distinctly detected, and most resistance to pressure was discovered over the lower half of the right side, where fluctuation also was less marked. The lower part of the abdominal walls and the lower extremities were œdematous. The uterus was rather elevated, and pretty well fixed in position. The sound entered the normal distance.

The diagnosis was a multilocular ovarian tumor, with one large cyst occupying nearly the whole cavity of the abdomen.

I immediately operated for the removal of the tumor, assisted by Drs. Brown, D. E. Kissam, W. A. Kissam, H. S. Smith, G. K. Smith, Spier, Chapman, and Clark, all of Brooklyn. There was no ascites. The fluid was contained in one large, thin-walled ovarian cyst, which was adherent to the walls of the abdomen. A large multilocular mass occupied the right side of the abdominal cavity. The diagnosis was, therefore, confirmed.

I have not presented the above case with the most remote idea of criticising the valuable paper of Dr. Thomas, but merely to show how so astute and accurate an observer may be led into error, as well as to call attention to one or two methods by which such an error might have been avoided. So far as I can comprehend Dr. Thomas's opinion it is this: that a large accumulation of ascitic fluid with a comparatively small ovarian tumor is indicative of malignant disease of the ovary. In confirmation of this opinion he cites five cases of dropsy, one of which is the case above reported. With regard to this case he says: "When I saw her this accumulation was so immense as to cause her great pain and inconvenience from distention. Dyspnœa from pressure against the diaphragm was especially marked. In this case, as in case fourth, I was struck by the fact that in dorsal decubitus no point of resonance could be discovered upon percussion over the abdomen, which I attributed to the excessive amount of effusion. To make more certain a diagnosis at which I had even now partially arrived, I obtained Dr. B.'s consent to paracentesis, and drew off several large pailfuls of straw-colored serum." It is just at this point that I wish to make an observation regarding the diagnosis in this case, and in all other cases where "the fluid is suspected of accumulating in such large amounts as to force aside the supernatant intestines, and produce dullness in place of resonance on percussion in dorsal decubitus." Now, the object of the tapping, in such cases, is "to make more certain the diagnosis," and there are two methods by which this can be satisfactorily accomplished: First, *by continuing to percuss the abdomen as the fluid is escaping.* As the fluid diminishes in amount, if contained in the peritoneal cavity, the intestines will sooner or later float upon it, unless bound down by adhesions, and *a resonant percussion sound* will be returned, which will be manifested in the most elevated points on every change in the position of the body; but if the fluid is encysted, the resonant sound will be stationary. I was fortunate, perhaps, in seeing this patient in the more favorable condition of a less distended abdomen, when the encysted character of the dropsy was more clearly marked, and when a fixed resonant point was traceable in the left hypochondrium. Second, the diagnosis can be made more certain *by the physical and microscopical character of the fluid.* Sometimes the physical character alone will decide the question, but when it is a "straw-colored serum," resembling ordinary ascitic fluid, the examination by the microscope will determine its real nature and its true source, by detecting, or not detecting, the peculiar ovarian granular cell.

CHAPTER II.

CYSTS OF THE BROAD LIGAMENT.

A CYST of the broad ligament constitutes *a peculiar form of dropsy*, to which, so far as I know, the attention of the profession has never yet been particularly drawn. There is no condition of the female abdomen that imitates ovarian dropsy so much as this. It may safely be asserted that its external appearances, when the disease is fully developed, are identical with those of unilocular ovarian dropsy, at a similar stage of development. The points of identity may be thus stated:

a. Like a unilocular ovarian cyst it occupies a position anterior to the viscera, and, consequently, the whole anterior and lateral portions of the abdomen yield the *flat or dull* sound on percussion, and *resonant* sounds are returned high in the epigastrium, hypochondria, and along the sides of the vertebral column.

b. Like it, the shape of the abdomen varies very little on changing the position of the body.

c. Like it, in all positions of the body the same regions remain dull, the resonant points never vary, and the sense of fluctuation is stationary.

d. Like it, the abdomen, although generally uniformly distended, may be larger on one side than the other.

e. As in ovarian disease, the general health is comparatively good.

So far the characteristics of cysts of the ovary and of the broad ligament are the same. The points of identity might have been extended to the sense of fluctuation, as an inexperienced hand would not be able to detect any difference. There *is* a difference, however: the fluctuation, although not more distinct than in ovarian dropsy, communicates to the hand the sensation of a *thinner* fluid.

The general health, also, suffers less in this form of cystic dropsy than is usual in ovarian disease. The emaciation never becomes so extreme, and life is much more prolonged.

Here, then, in a case of cyst of the broad ligament, are six very prominent indications of the existence of a unilocular *ovarian* tumor, and were the investigation to stop here, it would be impossible for any surgeon, even the most observant and experienced, to say that he had *not* a case of ovarian disease. On the contrary, the disease under consideration being generally unknown, or at least not classified in books, and being comparatively rare, the surgeon would naturally decide it to be a case of ovarian tumor.

But how can one be distinguished from the other? This question will best be answered by detailing some cases:

a. Case XXIX.—*Cyst of the broad ligament distinguished from ovarian tumor by tapping.* January 21st, 1845, Mrs. S. J. C., an English lady, aged forty years, consulted me for an abdominal enlargement. She was married at the age of nineteen years, had her catamenia regularly, and had never conceived. About three years before the above date, she noticed that her abdomen was enlarging. Since then it continued to enlarge, particularly during the last twelve months. Drs. Sharpless, Meigs, Norris, and Geo. McClellan had examined her, but the first-named gentleman had her particularly under treatment. They considered it a case of ovarian dropsy, incurable, and advised her not to be tapped. After making a careful examination, I arrived at the same conclusion, and unhesitatingly pronounced the disease *unilocular ovarian cyst*, informing the patient at the same time that the most reliable remedy was its extirpation. She decided to have ovariotomy performed. To determine whether or not it was a suitable case for the peritoneal section, I tapped her on the 6th of February, 1845, in the presence of Professors Wiltbank and Gilbert, removing thirty-five pints of fluid. After tapping, the intumescence of the abdomen not only entirely subsided, but the walls became actually incurvated, the concave surface of the diaphragm was well delineated, as were the projecting bodies of the lumbar vertebræ. No semi-solid deposits throughout the abdomen, and no ovarian cyst could be detected. This condition of things, but more especially *the character of the fluid*, made me at once abandon all idea of a further operation.

The patient was immediately placed under medicinal treatment, and a perfect recovery took place. She made a visit to Europe in May following, spent the summer there, and returned in the fall in better health than she had enjoyed for years before. Her health remained good until February, 1856, eleven years after tapping was performed, when another form of dropsy supervened, and death followed in two years. This case is referred to under the head of Case XXXIII.

b. CASE XXX.—"*A peculiar form of ascites,*" *after long and varied treatment, demonstrated by tapping to be a cyst of the broad ligament.* There are so many points of interest in this case that I shall report it much more minutely:

Miss J. C. called upon me February 1st, 1847, with a letter from Dr. B. J. Pennock, of London Grove, Chester County, Pennsylvania. The letter stated that she was a patient of Dr. Seals, and had been treated unsuccessfully for ovarian dropsy. Dr. P. desired her to consult me, and also Professor Meigs, and to get our separate opinions. This was done.. I gave my written opinion, as follows:

"It undoubtedly is a case of *encysted dropsy*, and most likely *ovarian*. Whether ovarian or not can only be decided by paracentesis. There is one large cyst filling up the abdominal cavity, crowding the intestines back upon each side of the spinal column, and pressing down the uterus against the perineum, and causing it to assume a retroverted position. The uterus appears to be perfectly normal, and I cannot discover that there are any tumors or smaller cysts connected with the large one. I have examined the cyst carefully in the several positions of the body, and also per vaginam et rectum, and consider it, without further information, to be an ovarian cyst.

"In giving you the foregoing opinion, I do not wish to be understood as saying *positively* that it is *ovarian* dropsy. My reason for not giving a positive opinion is this: two winters ago I was consulted by Mrs. C., who, for three years previously, had been treated for ovarian dropsy. After making a careful examination I pronounced the case ovarian, and as she desired the cyst to be extirpated, I tapped it, in order to decide upon the propriety of the operation. She was at least double the size of Miss C. The examination, which followed the tapping, soon satisfied me that the case, although *encysted*, was not ovarian dropsy. I immediately placed her under treatment, the dropsy never returned, she has remained well ever since, and now resides in Camden, New Jersey, in the enjoyment of perfect health. Now, the case of Miss C. reminds me very much of the case of Mrs. C., and consequently I feel some hesitation in saying that it is ovarian until it is tested by tapping. In consequence, also, of the happy results which followed paracentesis in Mrs. C.'s case, I would urge the same operation in the case of Miss C., with the object, that if it be like hers, there will be a prospect of a cure from medicine, and that if it be ovarian, there are other methods which may be considered. Apart from this course, I would recommend for the present no particular plan of treatment, inasmuch as encysted dropsy is usually so much beyond the reach of medicine that the common result of treatment is impairment of the general health of the patient rather than a diminution of the disease."

The patient was not aware of the existence of her disease until her increase of size attracted the attention of her friends. This was in October, 1845, sixteen months before. At that time the swelling was central, not inclining to either side. She had never suffered pain in either groin. At times menstruation had been painful, at others irregular, and sometimes the discharge was clotted. When she consulted me, she was regular. When constipated, she had a sense of obstruction in defecating, and occasionally had a frequent desire to urinate. She was a large, fine-looking, girl, and in excellent health, twenty-five years old, and the hymen was intact. She had been under severe medical treatment with calomel, squills, and tight bandaging. The latter was insupportable. This treatment was continued for months without inducing ptyalism, or producing any impression on her disease. The urine did not coagulate by heat, and amounted to about one pint in twenty-four hours.

Miss C. subsequently called upon Professor Meigs and was examined, and then returned home with our separate opinions in writing. A few days afterwards she came to Philadelphia with the following letter from Dr. Pennock:

"The patient saw Dr. Meigs after you left her, and from her report to me I think the doctor differs with us in opinion. He said pretty positively it was not a case of ovarian dropsy; that it was a 'peculiar form of ascites,' and he thought could be cured by medical treatment. If he meant by that expression encysted dropsy, I agree with him, but from the fact of his recommending medicine with a view to the removal of the fluid, I suppose he considers it merely ascites. If so I do not agree with him. The patient, however, having a little dread of paracentesis, seems desirous of trying Dr. Meigs's plan for the time he proposed [a fortnight], and if not benefited by it, then wishes you to tap her if you think best.

"I told her I thought you would have no objection to consult with Dr. Meigs, and that you would probably submit to the medical treatment. At all events, I advised her to see you before she took any further steps in the matter. . . . She wishes you to consider her as your patient under whatever treatment she may be placed."

The patient, having placed herself under my care with a view of trying further medication before resorting to surgical treatment, was accordingly seen by Dr. Meigs and myself in consultation. He wrote the following prescription:

℞.—Scillæ Acet. f℥ij;
Spts. Nitr. Dulc. f℥i;
Aquæ Menth. Sat. f℥iv.

M. A tablespoonful to be given every eight hours, gradually increasing in frequency to every five hours unless nausea was produced.

The above treatment was faithfully pursued until the 27th of February, sixteen days, without the least benefit. The abdomen remained of the same size, but the general health became impaired. The following ointment was now prescribed by Dr. M. in addition:

℞.—Veratriæ, ℈j;
Axung. Præpar. ℥i.

M. To be rubbed in over the abdomen twice a day for about fifteen minutes at a time.

This treatment was continued until the 12th of March, one month, with the result only of breaking down the patient's general health. After repeated solicitations on her part, the medication was suspended.

Afterwards I took sole charge of the case, and again examined her carefully, in order to ascertain what changes had occurred in the size of the cyst since her first visit to Philadelphia. When the patient was in a recumbent posture, the cyst could be traced above the umbilicus the length of the index-finger; in a standing position, it extended an inch higher. One month after, it extended above the umbilicus a finger length and an inch, while lying down, and while standing, a finger length and two inches. There had been evidently a considerable development of the sac towards the epigastrium. This was also apparent to the patient herself, who complained of the tightness of the clothing she wore five weeks before, and also of oppression of the chest when lying down. According to her own measurement, her circumference had not diminished, notwithstanding the loss of flesh. Consequently, there can be no doubt that in spite of the above treatment, the cyst had enlarged in all directions.

The general health of the patient having suffered greatly from the joint influence of medicine, poor diet, and confinement, she returned home to the country in order to regain it.

In the month of August following, my brother and myself, being in attendance at West Chester Court as witnesses in a malpractice trial, decided to visit the patient, eight miles distant. We there met Drs. Pennock, and Seals, senior and junior. She was again subjected to examination. The cyst had increased in size in all directions. It now extended two finger lengths above the umbilicus. The girth round the hips had lengthened one and a half inches, and above the hips rather more. Fluctuation could be felt per rectum et vaginam. The uterus was jammed against the perineum, the cervix and os uteri presenting horizontally forward, and the fundus and body curved upon the cyst and flattened, occupying a position towards the right side. Her measurement below the umbilicus was thirty-nine inches. The general health had not been restored.

The gentlemen present having coincided in opinion respecting the cystic character of the disease, it was agreed that tapping should be proposed, in order that, in the event of it being an ovarian cyst, an operation for its extirpation might be subsequently performed; or, if not ovarian, that the patient might be submitted to medical treatment with the hope of cure. My brother, Dr. John L. Atlee, of Lancaster, in whose judgment I have the utmost confidence, was so certain of it being a case of *ovarian* dropsy that he advised the patient to at once decide upon ovariotomy, so that no time would be lost by paracentesis. I objected to placing the patient in this position, and advised her to give no thought to an operation until the question of the character of the disease was decided by tapping.

Miss C. came to Philadelphia again in December following. She had increased in size in all directions, particularly on the left side of the abdomen, which projected from the umbilicus two inches farther than the right side. Her girth at this time was forty-two inches, three inches more than at last date. The cyst was one inch higher. The uterus was in the same position and condition, and so pressed down against the perineum that it could not be played about with the sound, which entered it to the distance of two inches. Menstruation had been regular since, but painful, and the discharge was somewhat clotted, lasting about one week. Pulse seventy-six. Appetite tolerable. General health rather better.

Having taken a dose of oil preparatory to tapping, she said that during its operation she felt the motion through the bowels entirely confined to the parts along the spine and behind the cyst. The urine was high colored, acid in reaction, and showed no albumen by the heat test.

December 11th, 1847.—In the presence of Professors Darrach, Wiltbank, Grant, and Drs. E. A. Atlee and Dorr, I tapped the patient, removing eighteen pints of fluid. So soon as the fluid escaped from the canula I announced to the patient that her disease was not ovarian dropsy, and that I believed she could be cured by medicine.

After emptying the abdomen, I examined it well. No organic disease could be discovered. All the viscera seemed healthy. There was resonance on percussion on the right of the umbilicus extending both upward and downward, but dullness elsewhere. The pulsations of the aorta could be plainly felt. There was no tenderness on pressure. The uterus had taken a position more towards the left, and was much more elevated. With one hand dipping into the pelvis above the pubes and the index-finger of the other in the vagina or rectum, it was easy to trace the pelvic organs. The uterus seemed somewhat larger than is usual in the virgin state; and its fundus harder than it is found in women who have had children. It was quite movable in all directions. The broad ligaments could be traced out and grasped between the fingers of both hands; the right was longer, and the left thicker, than the other, but both seemed to be healthy. On drawing the uterus towards the right side, so as to stretch the left broad ligament, some uneasiness was produced, although to do this required strong traction. The examination was carried out most carefully, but no indications of an ovarian cyst could be discovered. Thirty hours after paracentesis I examined the abdomen again, and found it, on percussion, resonant everywhere.

The patient was afterwards placed under medical treatment, recovered, and continued to enjoy perfect health until the autumn of 1854, a period of seven years, when indications of a return of her disease became apparent. She returned to Philadelphia in February, 1855. I tapped her, removing over eighteen pints of the same kind of fluid, and she again recovered under the same course of treatment. She married in December, 1856, and in nine months after was delivered of a healthy male child. She has had several children, and up to the present time, 1872, there has been no return of the disease.

The fluid taken from the patient, in the last tapping, was given to Dr. Thomas M. Drysdale for examination. The "fat globules" and the "blood corpuscles" referred to in his report, I think are foreign to the fluid, — the one being supplied by the oil on the instrument, and the other from the wound in the walls of the abdomen. Dr. D. reported as follows:

"*General appearance.*—The specimen was as thin as water and very nearly transparent, being but slightly opalescent on holding it before the light. It contained no deposit, and remained clear after standing for several days.

"*Chemical examination.*—The fluid had an alkaline reaction: its specific gravity was 1004. A few drops of nitric acid were added to a certain quantity, and heat applied until it boiled, but it remained perfectly clear, proving the absence of albumen and albuminous compounds.

"Five hundred grains of it were evaporated to dryness, and the solid residue weighed: this gave as the result, solid residue, 6 grains; water, 494 grains.

"The solid residue was then analyzed, and found to consist, almost entirely, of chloride of sodium, with a very minute quantity of carbonate of soda.

"*Microscopic examination.*—A few fat globules and blood corpuscles were the only objects found in the fluid. The specimen is nearly pure water."

c. Case XXXI.—*A cyst of the broad ligament diagnosticated by tapping.* July 30th, 1850, I examined Mrs. S. A. M., aged twenty-nine years. On exposing the abdomen, while the patient stood up, an immense tumor was presented, extending from the sternum to the pubes. The xiphoid cartilage was elevated to an angle of 45°, and the abdomen assumed a pendulous form in front of the pubes. The percussion sound was dull over the whole surface, and the sense of fluctuation was very distinct everywhere. When the patient was on her back, the abdomen was rather more flaccid, but very little altered in shape. There was no resonant percussion sound anywhere. It was the same when lying on either side, except that resonance could be detected over each lumbar region close to the spine. The uterus was low down, and occupied a central position in the pelvis. Its mouth was sufficiently open to admit the point of the index-finger. Its texture was natural. A sound was passed into the uterine cavity to the distance of four inches, and the mobility of the uterus showed that it was unconnected with the cyst. The girth was forty-eight inches.

The menses first appeared at the age of sixteen, and for three years previously her health was very delicate. She was regular up to the time of marriage, which occurred at the age of nineteen. Menstruation was unattended with pain, and lasted two or three days. She had four children, the youngest child being nearly three years old. She nursed her children from nineteen to twenty-two months, menstruated when they were twelve and fourteen months old, and did so regularly afterwards up to the period of conception. Three months after her first confinement, nine years ago, she noticed the enlargement of the abdomen, but had no recollection of having been larger on one side than the other. She enlarged so rapidly at first as to appear to be at the full period of pregnancy even before she had conceived the second time. There had, however, been a gradual increase afterwards. After the development of the cyst, the motions of the fœtus were felt in the left side. Parturition was always tedious and difficult, but never requiring the use of the forceps. There was no difficulty in defecation or urination. She was emaciated, although the general health was good.

Different methods of medical treatment had been pursued without any other effect than to injure her general health.

This case so strongly resembled the two preceding cases that I again gave a guarded diagnosis.

August 3d, I tapped the patient, removing thirty-five pints of precisely the same kind of fluid, after which she was placed under similar treatment with equally satisfactory results.

d. CASE XXXII.—*A supposed case of ovarian dropsy proved by tapping to be a cyst of the broad ligament.* This case occurred in the practice of my brother, Dr. John L. Atlee, of Lancaster, Pennsylvania.

August 23d, 1850, while on a visit to Lancaster, I was requested by my brother to see with him the wife of Dr. S. of that city. My brother supposed that his patient was affected with *ovarian* dropsy. On making an examination, however, I was so struck with the close resemblance between her condition and that observed in the cases heretofore referred to, that, with scarcely any doubt, I at once pronounced it one of these peculiar and curable forms of encysted dropsy.

She was thirty years old. About eleven years before she was attacked twice, at an interval of a week, with severe pain in the abdomen resembling cramp or colic. The pain soon subsided, and not long afterwards she noticed that the abdomen was enlarging. She was then unmarried. The enlargement gradually increased for three years, when Dr. S. was consulted. He subjected her to very active treatment, which vomited her severely and incessantly for nine hours, after which the swelling diminished. One year afterwards her physician married her. After having been married over three years she gave birth to a child. At the time of delivery she says there was scarcely any apparent diminution of her size. After this she continued to increase up to the time that I saw her.

Before leaving the patient we tapped her, and immediately the correctness of the diagnosis was proved; fifty-one pints of fluid escaped. This was followed by treatment, and she recovered.

Now, after having detailed these four interesting cases, let me recur to the question, How can we distinguish an ovarian cyst from this form of cystic dropsy? The answer is, *By the character of the fluid.*

In recording the first case, I made this memorandum: I took from the patient a large bucketful of *beautifully clear, transparent fluid, which did not coagulate either by heat or nitric acid. The fluid was so clear and transparent that the fibrous structure of the boards forming the bottom of the bucket could be readily seen, and appeared to be magnified.*

In the second case the record is: Eighteen pints of *clear, transparent, crystal-like fluid, very thin, free from any tinge in* *bulk. It gave no reaction with litmus-paper, and did not coagulate by heat. Placed in a wineglass, and examined by transmitted light, it exhibited a slight opalescent tinge.*

In the third case: Thirty-five pints of *transparent fluid, as clear as spring-water. The fibres of the wooden bottom of the tub could be distinctly seen through it. It did not coagulate by heat, but when boiled exhaled an osmazome or soup odor.*

And in the fourth case: Fifty-one pints of *serous, transparent fluid, having, in the sun's rays, a slightly bluish tint, and quite free from albumen.*

Here, then, is the diagnostic sign of this peculiar form of cystic dropsy, and which distinguishes it alike both from ovarian dropsy and ascites. The character of the fluid, therefore, constitutes the chief feature in the distinctive diagnosis. The fluid, in color, transparency, and consistency, is like spring-water. It may be slightly opalescent, but this does not affect its transparency. It is so perfectly clear that the bottom of a bucket, when filled with it, may not only be seen, but the fibres of the wood are rendered so distinct as to appear to be magnified. It contains no albumen, or if any, only the slightest trace, as neither heat nor nitric acid produces a coagulum,—the latter sometimes causing a faint cloudiness.

Although before tapping there are no positive means of distinguishing a unilocular ovarian tumor from this form of dropsy, yet, after tapping, in addition to the fluid, there are other corroborating circumstances, which confirm the diagnosis. These are:

a. In ovarian dropsy, after the cyst has been emptied, its thick walls can usually be felt. By grasping deeply both the walls of the abdomen and the walls of the ovarian sac, and rubbing them together between the thumb and fingers, the sac will be felt receding and slipping from the grasp. Besides, in the very large majority of the emptied ovarian cysts, ridges or nodules may be readily felt, and often seen. In peritoneal cysts, however, the closest examination will not detect its walls, and there are no semi-solid deposits in them.

b. In ovarian dropsy, after tapping, the parietes of the abdomen seldom sink away below the level,—the heavy cyst within occupying still a considerable space. In a cyst of the broad ligament, particularly in attenuated patients, the incurvation of the parietes is extreme,—the whole arch of the diaphragm, the iliac fossæ, and sometimes the vertebral prominence being plainly visible.

c. In ovarian dropsy, the cyst will, with very rare exceptions, refill after tapping in spite of medical treatment. In cysts of the broad ligament, treatment will often cure the disease,—after the fluid has been removed by tapping.

Here I will digress a moment to observe that up to this period of my experience I had supposed that medication, after tapping, was necessary in order to complete the cure of this form of dropsy. Further observation, however, has satisfied me that tapping alone will sometimes be followed by a disappearance of the disease, particularly when the operation is performed by a large trocar. If the opening through the thin cyst remains patulous, so that the fluid, as fast as it is generated, can escape into the cavity of the peritoneum, the accumulation will not recur. The fluid, in these cases, unlike ovarian fluid, is absorbable by the free surface of the peritoneum, and if the absorbents are sufficiently active it will be readily taken up. Consequently any treatment tending to increase absorption will render the cure more certain. The fluid, however, sometimes reaccumulates even in spite of medication, and this is supposed to be owing to the circumstance that the opening made by the trocar becomes closed. The fluid, therefore, is again imprisoned within its original walls, in which the absorbent and exosmotic functions are feeble or entirely absent. Hence, to meet these contingencies, I have originated the operation, to be hereafter referred to, of making a small opening in the linea alba, tapping the cyst, and afterwards drawing out and excising a portion of it, and returning the remainder, so that closure of the opening cannot thereafter possibly take place.

Pathology of cysts of the broad ligament.—I have given to this form of dropsy, in contradistinction to that of ovarian, the name of cyst of the broad ligament or *peritoneal* *cyst.* I do so, because it is cystiform in character, and I believe that the cyst is formed of peritoneum, and that its locality is in the broad ligament. At first, before I had an opportunity of making an examination of the abdominal cavity in a case of this kind, I thought it probable that the dropsical sac consisted of the great omentum, and that an accumulation of serum had occurred therein through some disturbance of the balance of secretion and absorption. But more recent experience induces me to locate the cyst in the broad ligament, as will appear by the following cases:

a. CASE XXXIII.—*A cyst of the broad ligament, eleven years after having been tapped, becomes the receptacle of ovarian fluid.* In giving the details of Case XXIX., page 108, it will be remembered I stated that the patient continued in perfect health for eleven years, when another form of dropsy supervened. Mrs. C. consulted me again in February, 1856. She had a return of the disease, and supposing it was of the same character, I tapped her. I was greatly surprised, however, to find the fluid *opaque, and yellowish-gray in color, coagulable by heat,* and from its character it was inferred to be ovarian. Still, I could not detect the presence of a cyst. The fluid was submitted to Dr. Drysdale, who reported as follows:

"February 7th, 1856.—Fluid from Mrs. C. This was an opaque fluid of a yellowish-gray or dirty-yellow color. It contained no deposit after standing for twelve hours. On rubbing some of it between the fingers it felt viscid.

"*Chemical examination.*—The reaction was strongly alkaline. Its specific gravity 1032. The addition of acetic acid produced no change in the appearance of the fluid. Boiling caused it to almost entirely coagulate, only a small quantity remaining liquid. Five hundred grains of the fluid evaporated to dryness showed it to consist of water, 450 grains; solid residue, 50 grains. The solid residue was then pulverized and washed with water, alcohol, and ether. The albumen, which was thus procured pure, was dried and weighed. Its weight was forty-three grains. The remainder of the solid residue consisted of fat and salts.

"*Microscopic examination.*—The granular cell, which is found in ovarian fluid, was very abundant: oil globules, free granules, and a few blood corpuscles composed the remaining objects seen."

April, 1857, Mrs. C. was tapped again, removing forty pints of *a brown-colored fluid, completely coagulable by heat.* After removal of the fluid, the percussion sound was resonant only in the epigastric and hypochondriac regions, and dull below them. The uterus was small. No tumors were discoverable either in the pelvis or abdomen, and, excepting the want of entire subsidence of the abdominal parietes, no satisfactory evidence of a cyst existed. Dr. Drysdale reported also on this specimen of the fluid, as follows:

"April 13th, 1857.—This second specimen of fluid from Mrs. C. was of a light-brown color, and, when in mass, was nearly opaque: its consistence was that of a thin syrup.

"*Chemical examination.*—Its specific gravity was 1026. Its reaction alkaline. The addition of acetic acid produced a slight cloudiness. Boiling caused it to become nearly solid, the albumen coagulating in a granular mass.

"Five hundred grains of the fluid evaporated to dryness gave of solid residue 39 grains, water 461 grains. The solid residue was washed with water, alcohol, and ether, as in the first analysis, and was found to contain twenty-nine grains of albumen. The remaining ten grains consisted of fat and salts.

"On evaporating the washings to dryness and examining them under the microscope, numerous crystals of cholesterine were seen.

"*Microscopic examination.*—The usual granular cells of ovarian fluid were present in abundance: in addition to these were seen fat globules of a nearly uniform size, large granular cells like those described by Gluge, and blood corpuscles."

After both tappings, Mrs. C. was placed under the same medical treatment as in 1845, but without the slightest effect. The patient's health rapidly broke down under this new form of disease, and in January, 1858, she sent for me again, insisting on ovariotomy for her relief. The distention of the abdomen was very great, her distress intense, she was unable to occupy the recumbent position, and the lower limbs were largely œdematous. Fluctuation was uniform over the whole abdomen. The pelvis was crowded, the uterus was evidently atrophied, and jammed against the sacrum; its cervix could not be felt, and the sound entered only one inch and a half.

The abdomen was opened in the linea alba, below the umbilicus, to the extent of three inches, and a thin, semi-transparent cyst was exposed, from which forty-two pints of *a dirty greenish-colored fluid* were drawn. The cyst was then seized by a tenaculum, and, in a few moments, the whole of it was extracted without the least impediment from parietal adhesions. It was exceedingly thin, but very vascular. It had no pedicle, and seemed to be an expansion of the whole broad ligament, extending round the brim of the left side of the pelvis, and involving the fundus of the uterus, which was atrophied, and pushed to the right.

I can offer no explanation of the above rare and interesting case in any other way than to suppose that the first form of dropsy—*the peritoneal cyst*—originated in the broad ligament adjacent to the ovary without involving it, for at this early period the fluid removed was of that peculiarly clear spring-water character, which is diagnostic of that form of disease. Years after the dropsy returned, and was clearly *ovarian*, as proved by the physical, chemical, and microscopical characters of the fluid. Yet the sac removed was not ovarian, but peritoneal. The ovary, therefore, must have become subsequently diseased, and its morbid secretions have found an inlet into the old peritoneal cyst, which served as a receptacle for them.

In this connection it may be observed that in the vicinity of the ovary, as well as in the ovary itself, there appears to be a peculiar liability to the formation of cysts. Hence we find them developed in different parts of the broad ligament, or other surfaces in the pelvis, or even from the fundus of the uterus; and, frequently, the true ovarian cyst, as it enlarges and monopolizes the cavity of the abdomen, seems to excite in the surrounding parts, with which it comes in contact, a disposition to the formation of hydatid cysts.

b. Case XXXIV.—*A cyst of the broad ligament extirpated, leaving the adjacent ovary in position.* September 6th, 1863, I was consulted by Mrs. P. McM., aged forty-four years, the mother of four children, and still menstruating regularly. She was as large as a woman at full period of gestation, and dated the commencement of her disease in January preceding. All the signs of a unilocular ovarian cyst existed, and its removal was decided on.

October 8th the cyst was removed. It contained *a clear, transparent fluid, like spring-water, with a slight opalescent tinge.* It was attached to the right side of the uterus by a quite vascular pedicle, consisting of a portion of the broad ligament and Fallopian tube. It contained a small secondary cyst in its wall, and was perfectly smooth on the inside. No remains of the ovary could be detected. The fimbriæ and three or four inches of the Fallopian tube were attached to it.

The patient recovered from the operation, but subsequently died suddenly in a convulsion.

An autopsy was made by Dr. Drysdale, and the right ovary, in an atrophied condition, was found still remaining *in situ*,—proving that the cyst originated and was developed in the broad ligament, and not in the ovary.

Let us now inquire in what portion of the broad ligament this cyst is developed. In order to illustrate this point, its anatomical conformation must be kept in view. The broad ligament is constituted by the peritoneum folding over the Fallopian tube, both back and front, forming a double sheet of membrane beneath it, and so as to bring together two portions of its *outer surface*, and these two portions are united by areolar tissue. Now, in my opinion, cystic action is set up in the connective tissue at some point within this double, or duplicated membrane, and fluid is accumulated, forming a cyst, which continues to enlarge just like a monocystic ovarian tumor. Instead of containing a viscid, or opaque, or a colored coagulable fluid as in ovarian dropsy, or a yellowish serum as in ascites, it contains a clear, spring-water-like uncoagulable fluid, in appearance resembling the fluid that sometimes accumulates in the cellular tissue elsewhere. This fluid is absorbable by the *interior* surfaces of the peritoneum. Hence, after the excision of a portion of the cyst, and sometimes after simple tapping, when the opening through the cyst remains patulous to allow *leakage into the peritoneal cavity*, the disease will not return. It will thus be seen that *the interior of the cyst* is formed by *the exterior surface of the peritoneum*, by which surface the fluid is not capable of being absorbed, but when transferred to the *interior* of the peritoneum it is rapidly absorbable. Hence the philosophy and success of the operation referred to. The rupture of such a cyst,—and this is not unlikely in consequence of its great tenuity,—will be followed by recovery; and it is probable that the large majority of cases of recovery, after rupture, reported as ovarian, are of this peculiar character.

Concentric cysts of the broad ligament.—There is another form of this disease that should be considered under the same head. It is a double concentric cyst, also developed in the broad ligament, and not involving the ovary. It is impossible, before opening the abdomen, to distinguish it from the peritoneal cyst, as the same signs accompany both. It is also impossible by tapping to tell one from the other, as the fluids are precisely alike. I know of only one certain mode of recognizing the difference, and that is by inspecting the cyst after laying open the abdominal cavity: the concentric peritoneal cyst will then be seen to be double, consisting of an outer and an inner cyst,—the exterior vascular and the interior non-vascular, or but slightly so. I believe this form of disease to be more rare than the other, though this is mere conjecture, as my experience is not sufficient to decide this question. Besides, of the cases that do present themselves, few are subjected to the operation of gastrotomy, by which alone the question can be decided.

a. CASE XXXV.—*A double concentric cyst of the broad ligament, not involving the ovary, extirpated.* July 8th, 1866, I examined Miss Z. F., aged twenty-nine years. At that time menstruation was regular, but formerly it was irregular. Four years before, she began to enlarge and gradually increased in size until about eight months before I saw her, when she was tapped, removing a bucketful of clear water-like fluid. In a few months the cyst refilled.

It was at this period she was brought to my notice. There existed the strongest signs of a unilocular ovarian tumor, and which, in consequence of the reported character of the fluid, I diagnosticated as one of the peculiar peritoneal cysts.

On the 7th of October I commenced an operation with the view of merely cutting off a portion of the cyst, and returning the remainder to the cavity of the abdomen. But upon opening the cavity I encountered a vascular membrane, resembling, to some extent, the omentum. This membrane was not attached to the inner part of the abdominal wall, as is sometimes found in operating for the removal of an ovarian tumor. I endeavored, therefore, to push it aside, but not being able to do so, I made an incision into it so as to expose the cyst. I was surprised, however, to find a thicker walled cyst than I expected. Instead of the wall being translucent like the peritoneum, it was opaque, like that of a thin ovarian cyst. I determined, therefore, to change my plan, and extirpate the whole of it. After emptying it of several quarts of very clear, transparent, spring-water-like fluid, uncoagulable by heat, I attempted to remove it through the opening made in the enveloping vascular membrane. But I soon found that this membrane belonged to the cyst itself, and was a loose covering for it, so that all came away together. The cyst originated in the right broad ligament, and was close to the ovary. The latter was slightly enlarged, in contact with the cyst, and was removed with it.

This cyst had a most singular conformation. It was double, but concentric; the outer cyst wall contained the thickened and elongated Fallopian tube and the attenuated fimbriæ, and numerous vessels, resembling a vascular omentum. It seemed to have no attachment to the interior cyst, excepting at the pedicle, and could be moved upon it readily. The interior cyst, which contained the clear fluid, was thus cut off entirely by it from the ovary and Fallopian tube. This was the first case of the kind that had presented itself to me. A beautiful preparation of the specimen, showing both cysts in their relative position, has been made by the Curator of the

College of Physicians, Philadelphia, and is preserved in the museum.

b. CASE XXXVI.—*A double concentric cyst of the broad ligament, not involving the ovary; a portion removed.* November 9th, 1865, I was consulted by Mrs. A. H., aged forty-four. Menstruation had been irregular and rather profuse. She married at the age of twenty, but had never conceived. The abdominal enlargement commenced five years before I saw her, and during the last seven months she had increased rapidly. The lower extremities were very œdematous. She had become emaciated.

All the characteristic signs of a single ovarian cyst existed. The abdomen was not tense, but rather flaccid, and fluctuated very distinctly in all directions. No ridges or nodules could be felt beneath the walls of the abdomen. The xiphoid cartilage was pushed up at an angle of 45°. The uterus was central, its cervix elongated, and the organ movable. The sound entered two and a half inches.

March 5th, 1867, the patient, having become enormously enlarged, requested an operation. This was done with the understanding that if it proved to be a cyst of the broad ligament only a portion of it would be removed. An incision was made through a very attenuated wall immediately down to a vascular peritoneal membrane. This was incised, and exposed the surface of a cyst, which resembled the fibrous structure of an ovarian sac, but on puncturing it I was surprised to find a clear, transparent, spring-water-like fluid escape. As it flowed away, the cyst, with its vascular membrane outside of it, protruded through the opening. There were two concentric cysts: the exterior one appeared to be peritoneum proper and very vascular, and the interior, a non-vascular, but more dense cyst, containing the clear fluid. There seemed to be very slight adhesions between them, but these were easily separated. Instead of extirpating the whole cyst, which would be the best practice in all these cases, I drew out a portion of it through the opening in the peritoneal coating, and cut off a portion as large as the palm of the hand, and returned all the rest. The upper edge of the outer cyst was secured to the wound to guard against hemorrhage.

The patient recovered from the operation, had a return of the dropsical effusion, and died between three and four months after of chronic peritonitis.

A post-mortem examination was made "thirty-six hours after death, and a cyst found attached to the left ovary by a small pedicle. There were adhesions only at the point of incision made during the operation a few months previously. Chronic peritonitis existed in the neighborhood of the pedicle."

I do not know how to explain the formation of these concentric cysts, unless the seat of the disease is within the parovarium, or in the structures adjacent to it existing in the alæ vespertilionis, or in the remains of the tubules of the Wolffian bodies. In that case, as they are all within the folds of the broad ligament, the necessary result would be that as the cyst became developed it would carry with it on its exterior the peritoneal coat. The only objection to this view is the great magnitude of these peritoneal cysts, which contain from twenty to sixty pints of fluid, while the cysts of the structures referred to are uniformly very small.

The cause of the failure to cure in the above case must be manifest. The fluid formed after the operation, although it may have escaped from its appropriate cyst, did not get in contact with the cavity of the peritoneum, or the *interior* absorbing surface of that membrane, but accumulated in the cavity of the outside cyst, and, therefore, was in contact with the *exterior* non-absorbing surface of the peritoneum, the cut edges of which cyst were secured to the wound at the time of the operation, and the opening was closed, as proved by the autopsy.

It may be thought that I have treated this part of my subject too much in detail, but I offer no apology, as the cases are of the greatest practical importance, independent of the subject of ovariotomy, and possess the most intense interest in the consideration of differential diagnosis. They present features in disease, which, at the time, were entirely new to me, and to which, so far as I am aware, the attention of the profession has never been particularly called. Besides, the treatment adopted in these cases may contribute something towards diminishing human suffering, and prolonging life.

Tapping as a therapeutic agent.—These cases, also, place paracentesis abdominis in a new light. In its therapeutical connection it assumes an importance which it never possessed before, and while it is indispensable as a means of diagnosis, it is equally so as an adjuvant in effecting a cure. The *fluids* have been too much overlooked in tracing out the character and in deciding upon the curability of the several forms of dropsy. They furnish a most important key in explaining their nature. They are always readily procured by an easy and safe operation. The opinions promulgated by Thomas Safford Lee, of London, and Professor Charles D. Meigs, of this country, on the *dangers of tapping*, have not only tended to augment human suffering, and to curtail life, but also to interfere with the progress of science. When the surgeon, casting aside these opinions on tapping as heterodox in surgery, because unfounded in fact, adopts this simple and safe operation, both as a diagnostic and a palliative measure, he will unlock some of the mysteries, which now impede the cure of disease, and add to the comfort and length of life.

CHAPTER III.

OTHER CYSTIC TUMORS OF THE ABDOMEN.

Besides the peculiar cysts discussed in the preceding chapters, others may be developed in the omentum, in the mesentery, or in the sub-peritoneal cellular tissue; they may occur in connection with the liver, the kidney, and the uterus; and they may be the result of hydatids.

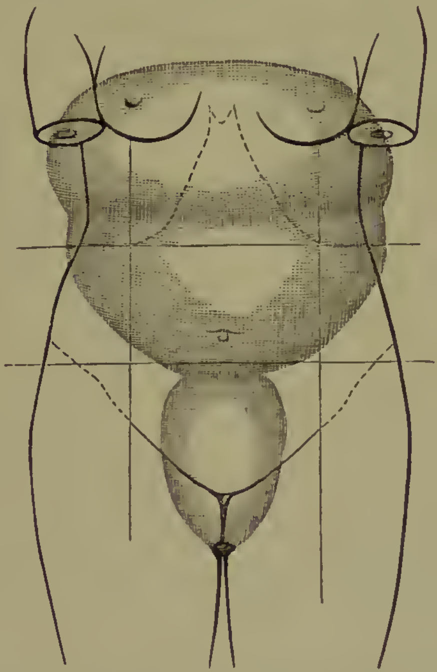
In tracing out the diagnosis between these tumors and those of the ovary, great regard must be paid to the early history of the case: the point of origin, the seat of greatest suffering, the character of the functional derangement, and the amount of constitutional disorder. But whatever may be their character, when of great size they are distinguished with difficulty from ovarian tumor. Dr. Harvey, of London, mistook a hydatid cyst of the liver for an ovarian cyst. Ovariotomy was decided on, but the patient died before it was performed. Dr. Clay, of Manchester, committed a similar error. He, however, performed the operation, removing more than two large washhand-basinfuls of loose hydatid cysts instead of an ovarian tumor. Dr. Buckner, of Cincinnati, removed a cystic tumor of the mesentery instead of a tumor of the ovary, for which he had instituted the operation. And I extirpated a large cyst, attached by a pedicle to the fundus uteri, which was diagnosticated to be an enlarged ovary.

The cysts most likely to be mistaken for an ovarian tumor are those of the liver, the kidney, and the uterus. They are, however, attended by much more functional disturbance, by greater suffering, and, in regard to those of the liver and kidney, originate in different localities. Cysts originating in connection with the uterus have nearly the same locality as those of the ovary. Cysts of the omentum, mesentery, and abdominal wall are comparatively rare.

The differential diagnosis in these cases can be best studied at the bedside, and attention will therefore be directed to the history of a few illustrative cases.

A. **Hepatic cyst.**—*a.* Case XXXVII.—*Hepatic cyst associated with pregnancy; autopsy.* February 1st, 1854, Miss S. M., aged twenty-six years, was brought to my office by her physician in consequence of a peculiar enlargement of the abdomen, which had resisted pretty energetic treatment. Upon placing her in a recumbent position, and exposing the abdomen to view, there was presented a very singular appearance. About the waist, where the skirts had been tied, there was a deep sulcus. Above this line the hypochondriac and epigastric regions were remarkably prominent; below it the protuberance was less, but still so great as to be striking. This fullness extended downward below the umbilicus. The whole of this enlarged region, particularly over the right side, returned a dull percussion sound, and at the same time a distinct fluctuation was perceptible. On making percussion downward it was noticed that the central division of the abdomen continued to be dull quite to the pubes, while on each side, in both inguinal regions, the resonant sound existed. This led to a more particular examination of this region, and finally a tumor, resembling an enlarged uterus, was traced out. It was about the size of a uterus containing a fœtus in the fourth month of its existence. (See Figure 9.) It was elastic and somewhat movable. As her physician was not aware of the presence of the uterine tumor, special attention was called to it, and, in our consultation, my fears were expressed that the young lady was pregnant, particularly as there had been a cessation of the menses. In consequence of the high social position of the patient, her physician insisted that this opinion could not be entertained, and thought the enlargement in the hypogastric region must be a uterine fibroid tumor. I did not make an examination per vaginam, as would have been done with my own patient, but advised it to be done, accompanying the advice with the presentation of a copy of my Essay on Fibrous Tumors of the Uterus, as an aid to the diagnosis.

Fig. 9.



A diagnosis was made by exclusion in this case. The tumor was not ovarian, because no ovarian cyst could be so poised upon the fundus of an enlarged uterus, and fill the upper regions of the abdominal cavity, expanding it in all directions, and, at the same time, avoid entirely any encroachment upon the less resisting lower portion of the abdomen.

February 18th, I saw the patient again, at her own residence. Her physician, in the mean time, having read my Essay, and having implicit confidence in her chastity, proceeded to examine the uterus for fibroid tumor, and introduced the sound into its cavity. This examination was followed by a discharge of liquor amnii and an abortion, and this was succeeded by metritis and subsequent phlebitis. It was at this period that I saw her again in consultation. On inspecting the abdomen during this visit, I still noticed the peculiar enlargement above, while the fullness below had disappeared, and the whole lower portion was resonant on percussion.

The patient died about nine weeks after this visit. Forty hours after death an examination was made by Dr. Drysdale. The lower limbs and body were largely œdematous. The abdomen was prominent and wide, particularly in the epigastric and hypochondriac regions, the lower border of the ribs having been elevated and expanded by the cyst within. An incision was made so as fully to expose the contents of the abdomen. The liver was found to be forced over into the left hypochondrium, as also were the stomach and the duodenum; the right kidney was pushed forward, and the vena cava ascendens and vena porta were forced towards the left, and considerably raised from the vertebral column. The diaphragm was pushed up so as to crowd the lungs into a small space. The right hypochondrium was entirely occupied by an enormous cyst, which extended into the left side beyond the median line, and downward so as to fill the right lumbar region. The edge of the right lobe of the liver was attenuated to such a degree that it formed a thin coating to the upper part of the cyst,—arising, no doubt, from the pressure of the cyst against the diaphragm, the liver being between them. The cyst was closely adherent everywhere, the walls were quite thin, and appeared to consist of peritoneum, which had become opaque and condensed. It was filled with several gallons of a yellowish whey-like fluid. On its internal surface were deposits of a white, pasty substance, resembling prepared chalk made into a very thick paste with water.

The cavity of the abdomen contained a considerable quantity of serum. The liver was of normal size, but had a yellow, mottled appearance. The right kidney, after the cyst had been emptied, hung loosely in the abdomen, but was healthy in structure. The pericardium contained a large quantity of serum highly colored with blood; so also did the cavities of both pleuræ. The heart was enlarged and flabby. The pleuræ, costalis and pulmonalis, were covered with masses of yellow deposit. The mesenteric glands were enlarged, and in color resembled the yellow deposits on the pleuræ. The lungs crepitated but slightly, and on being cut resembled in appearance the tissue of the liver.

The singular chalk-like substance, above referred to, was examined with the microscope by Dr. Drysdale, and a note describing its character was made, but this and other memoranda were lost. I have no doubt, however, that this substance was the same as that described by Nélaton in his Clinical Surgery, edited by Walter F. Atlee, M.D., at pages 530 and 545, as being found deposited on the internal surface of hydatid cysts. He says, "On the internal surface is seen a powder, resembling white sand. This powder is composed of echinocoques, very minute animals, ovoid, with a constriction at their middle portion, so that they are divided into an anterior part, the head, and a posterior part, the caudal bladder. The latter always contains, in the fully developed animal, some rounded corpuscles of carbonate of lime, which have a very curious appearance."

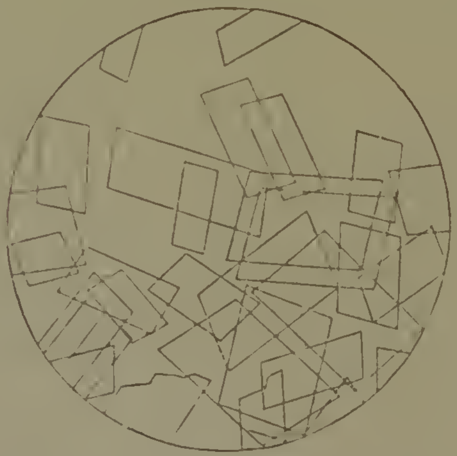
b. CASE XXXVIII.—*Hepatic cyst mistaken for ovarian dropsy; the fluid, removed by tapping, containing cholesterine.* This patient was Mrs. S., of Pinegrove, Pennsylvania. She was a woman of middle age, and under the care of Dr. J. G. Koehler, of Schuylkill Haven, a gentleman of excellent standing in the profession. In his letter to me he said, "I called on her in June last, and found her laboring under dropsy, which I pronounced encysted or ovarian. Nothing short of an operation will be of any service to her. I recommended tapping. To this she has objected. She says her abdomen is only filled with wind. . . . . I have her now satisfied that it is not wind, and further, she is willing to be operated on should you deem it proper." A few days after Dr. K. again wrote, "Mr. S., with his wife, will visit you in the city on Monday. You will please, after examining the case, send me a short statement for my own satisfaction. You can arrange with Mr. S. when and where the operation will be performed, if you think it a suitable case. It is true I may be mistaken in my diagnosis."

December 3d, 1850, I examined the patient in Philadelphia. She was emaciated, cachectic, and icteroid. The abdominal enlargement was greater than at full period of pregnancy, but not so symmetrical in shape. There was more prominence in the left hypochondrium than in the right, and rather more throughout the whole left side. The percussion sound was dull everywhere except along the right side and high up in the epigastric and right hypochondriac regions. The shape of the abdomen and the sounds on percussion did not vary by changing the position of the body. On pressing with the fingers over the right portion of the umbilical region there was a peculiar crepitation, resembling that of air in the cellular tissue, and which was quite audible. Over this spot it was semi-resonant, and yet at the very same spot there was distinct fluctuation. There was fluctuation throughout the whole abdomen, even at the resonant points on the right side.

On examining per vaginam, the pelvis was found to be occupied by an elastic substance filling the superior strait, and the uterus was pressed down against the perineum. The cervix was flaccid and not well defined, and the os patulous. The sound could not be introduced, even on using considerable force.

Next day I tapped Mrs. S., removing twenty-seven pints of cider-colored fluid, upon which floated a thick transparent oleaginous stratum. Where it fell upon the sheet and soaked in, and upon the abdomen and dried, there remained innumerable shining particles, like crystals or spangles. The oily stratum appeared to consist of these crystals.

Fig. 10.



The supernatant fluid, when examined by the microscope, was found to consist exclusively of *cholesterine*, as may be seen in the drawing, Figure 10, made by Dr. Drysdale. The heavier cider-colored fluid was coagulated by heat.

In critically examining the above case it will be found to resemble ovarian dropsy much more closely than the preceding one, and this resemblance extends even to the physical and chemical character of the fluid. The only point of difference was the resonant point to the right of the umbilicus, over a fluid which could be made to fluctuate beneath it. And yet on the supposition that it was an ovarian cyst, this could be satisfactorily explained. As the cyst became developed, and gradually increased in size, inflammation might have united it to the intestines, and then, instead of the latter having been crowded back as the former filled up the abdominal cavity, the cyst, in its development, might have shelved under the intestines, keeping them in front of it, so as to produce all the symptoms that existed in this case.

But I will continue the history a little further. After the fluid was removed from the cavity of the abdomen, there was great incurvation of the parietes. The atmospheric pressure forced them in so as to exhibit the concave surfaces of the diaphragm and iliac fossæ, and the ridge of the vertebral column. No tumors, ridges, or indurated masses, could be detected.

The day after the tapping I made a very careful examination of the patient, and could not satisfy myself of the presence of an ovarian cyst. The skin of the abdomen had a peculiar leather-like appearance. The pelvis was entirely free, and the sound could be passed into the uterus to the distance of four inches.

The idea of ovarian dropsy was now abandoned, and the case was thought to be a cyst connected with the liver. The patient was placed under medical treatment, and she returned home on the second of January following free from dropsy, and much improved in general health. On making a professional visit to Pinegrove nine years after, I found her in excellent health, which she has continued to enjoy to the present time.

In the foregoing cases of hepatic cysts the general health was very much impaired, more particularly in the last one. In such cases, could the accurate observer have an opportunity of watching their progress from the earliest period, he could not fail to decide against the existence of ovarian disease, as in the latter the enlargement begins below and progresses upward, while in the other it begins above and extends downward. But at a later period, when the abdomen becomes entirely occupied by the cyst, it may be impossible to diagnosticate correctly until the patient is tapped, and even then it may be difficult to decide the question.

c. CASE XXXIX.—*Traumatic cyst of the liver; death on the fifty-third day; autopsy.* The following case may be designated a traumatic cyst of the liver, and although it occurred in the male, the same accident might occur to the female, and consequently be erroneously interpreted.

In the month of August, 1859, G. P., aged thirteen years, was struck by the tongue of a fire engine in the right side below the ribs. Dr. Spackman saw him about eight hours after the accident. Two weeks after the injury the abdomen began to enlarge. Dr. T. M. Drysdale was called in consultation on the 19th of September, 1859, about four weeks after the accident. He says, at that time, "the veins of the abdominal wall were very full.' Above the umbilicus the abdomen was tympanitic, below there was a collection of fluid which fluctuated. By percussion the colon could be discovered resonant on the right side. The outlines of the stomach could also be made out. The chest was resonant everywhere, except at the lower part of the right side, which was dull on percussion as high up as the nipple."

A few days afterwards I was requested to see the case with the above-named gentleman. There was very great abdominal distention, with all the symptoms just described, and producing such intense distress that I recommended tapping, which operation I performed on the 26th of September, about five weeks after the injury. Dr. Drysdale, in his notes of the case, says there were "obtained by tapping fifteen and a half pints of fluid, which, in color and consistence, resembled bile, and some which fell on the shirt of the boy stained it yellow. The abdomen resumed a natural appearance after tapping."

The patient, however, died on the 16th of October, about two months after the injury, and twenty-eight hours after death an examination of the body was made. "A large cyst was found to occupy the greater part of the abdominal cavity, and which, at first sight, was supposed by some to be an enormously distended urinary bladder, but this idea was dispelled by finding that organ, containing about six ounces of urine, beneath the cyst. On tracing the relations of the cyst, it was found to dip into the pelvis between the bladder and rectum, being attached to the peritoneal surface of both these organs by weak adhesions. In examining the liver, the common duct was found torn completely across and terminated in the cyst, being firmly adherent to its upper part."

The above very instructive case is reported in detail by Dr. Drysdale in the *American Journal of the Medical Sciences* for April, 1861, page 399. Had it occurred in the female, and apart from the severe accident, it might readily have been mistaken for ovarian dropsy. A much less violent injury may rupture the hepatic or cystic duct, or the ductus communis choledochus, and afford an exit to the secretion of the liver, so that long after such an injury had been forgotten, the case might come under the observation of the surgeon, and be erroneously diagnosticated and treated. Or, a gall-stone by its pressure may establish the ulcerative process in the cystic or common duct, or in the walls of the gall-bladder itself, which, perforating their walls, might result in the same condition. Cases of perforating ulcer from like causes have come under my observation, but instead of these perforations originating a case like the one above detailed, they have opened into the intestinal cavity, affording an exit to large gall-stones through this channel, or, aided by suppuration, these calculi have passed directly through the abdominal wall.

B. **Cyst of the kidney.**—The following case is presented in consequence of its supposed connection with the kidney, and of its close resemblance, in several important points, to a multilocular ovarian tumor. It occurred, however, in the male, otherwise it might have been mistaken for an ovarian cyst by even a careful observer inexperienced in ovarian enlargements.

a. CASE XL.—*Cystic disease of the kidney, resembling multilocular ovarian tumor.* J. Y., Esq., aged over sixty years, enjoyed the most robust health up to March, 1858, at which time he was seized with a cramp-like pain in the abdomen, not very severe, and of which he was relieved in three or four days. Christmas following he had a similar attack, accompanied with some hepatic and gastric derangement, with paroxysms of quotidian intermittent fever. This attack did not pass off as the other, but resisted treatment, and in a few days was followed by evident derangement in the functions of the kidneys. A specimen of the urine was examined with the microscope, and a few casts of the uriniferous tubules were detected. The periodical fever was broken up by the use of quinine, but was followed by another intermittent attack of a singular character, and which could not be controlled by quinine or anything else that was prescribed. At intervals of three or four days he was regularly attacked with pain and distress in the right hypochondriac region, or rather below it, followed by vomiting of a greenish fluid in large quantities. He was always relieved by these discharges of bile, and continued to suffer until they occurred. The third week in January, 1859, he called my attention to a fullness in the right side. On exposing the abdomen, while the patient occupied the recumbent position, this fullness was perceptible to the eye; its highest point was about three inches to the right of the umbilicus, and above it, and it sloped off uniformly in all directions, extending as far towards the left as the linea alba. It was smooth, yielding, elastic, dull on percussion, and fluctuating. It was evidently a cyst, as large as a fœtal head, and immovable.

This discovery I fancied would enable me to explain some of the peculiar symptoms of the case. Here was an immovable tumor pressing on the common bile duct and obstructing the flow of bile into the duodenum, and thus engorging the gall-bladder, which, becoming greatly distended, would be excited to spasmodic contractions every three or four days, and force away its contents to be ejected by the stomach. This view was also strengthened by the clay-colored stools, the porter-colored urine, and the icteroid appearance. These symptoms led me to believe that this tumor was hepatic, notwithstanding the microscopical evidence of the existence of desquamative nephritis.

By this time the patient's general health had given way to a considerable extent; his appetite was failing, he had lost strength rapidly, and there was marked emaciation.

Day after day the tumor became more prominent, and all about its base there sprang up others,—all of a cystic character,—making six in all, the original one occupying the centre. This mass extended itself so as to occupy the whole right side of the abdomen, and encroached upon the left side to a considerable distance, crowding the intestines beyond its border. The outlines of each cyst could be traced by the eye in the elevations and depressions they made in the abdominal parietes. They, however, evidently constituted only one tumor, which, instead of being formed of several independent cysts merely aggregated together, was probably one large sac divided into chambers by septa, which, having openings, allowed free communication between them. At all events, it resembled more a multilocular ovarian cyst than it did anything else.

The rapid growth of the tumor, and the equally rapid decline of the health, strength, and weight of the patient, in spite of all treatment, convinced me that I was dealing with a malignant tumor,—most probably colloid in character,—and that the result must necessarily be fatal.

Early in March, 1859, Professor Joseph Pancoast was associated with me in the treatment. About the middle of April we noticed that the tension of the tumor was diminishing, and at the same time the quantity of the urine was increasing. The urine, also, was altered in color, becoming bloody, and of a dirty brown, and was loaded with sediment. Immense quantities were discharged through the bladder for several days, and during this period there was a corresponding diminution in the size of the tumor. The natural inference was that the tumor was really a cyst of the kidney, and was now discharging its contents through the ureter and bladder. The hard walls of the sac remained, while its contents continued to escape with the urine; but the patient gradually sank, as is usual in malignant disease, and died early in June, 1859. No autopsy was allowed.

An examination of this fluid, which consisted of both the contents of the cyst and of the bladder, was made by Dr. Drysdale, who reported as follows:

"The fluid, passed by Mr. Y., which you gave me to examine, April 18th, 1859, was of a dirty light-brown color. Its specific gravity was 1020. Its reaction was alkaline.

"Under the microscope it was seen to contain plates of cholesterine, coagulated fibrin, blood cells, oil globules, and great quantities of granular cells, which in appearance closely resembled those formed in ovarian fluid.

"Another specimen of the fluid, passed a few days later, was examined, and found to contain less cholesterine and fewer cells, the granular cell being very sparse. Casts of the uriniferous tubes and crystals of uric acid were also found in this specimen."

In reviewing this interesting case it will be proper to keep out of view the sex of the patient, as cases of this character may occur in the female as well. Here was a tumor occupying the largest portion of the abdominal cavity, crowding the intestines out of their natural position, altering the uniform contour of the surface, producing wave-like elevations and depressions, even perceptible to the eye; a tumor which, both by palpation and percussion, was ascertained to be multilocular and cystiform; and, what is the most remarkable feature, a tumor whose contents contained granular cells closely resembling ovarian fluid. In all these points, therefore, there was a close resemblance to a multilocular ovarian tumor.

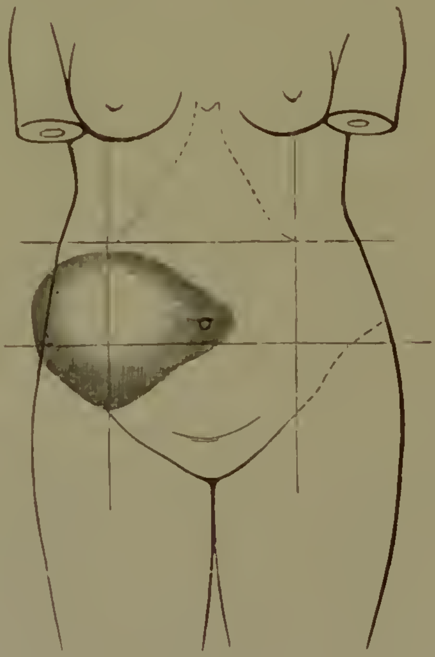
But when we go back to the early history of the case we will notice some signs distinguishing this from the early period of ovarian disease, and which will greatly aid in forming a correct diagnosis. Its origin was in the upper part of the right lumbar region, instead of the inguinal or hypogastric; the seat of greatest suffering, preceding the discovery of the tumor, corresponded with the same locality, instead of being in either side of the pelvis; and the functional derangement was confined to the viscera occupying the superior part of the abdominal cavity. Add to this the continued fixedness or immobility of the tumor, the great amount of constitutional disorder, and the rapid diminution of the vital powers, and we have a case differing from the ordinary course of ovarian tumor.

b. Case XLI.—*Cystic disease of the kidney, resembling unilocular ovarian tumor.* November 1st, 1860, Dr. J. P. Chandler, of Centreville, Delaware, brought his sister, Mrs. J. M., to the city to consult me in reference to an abdominal tumor. She was forty-five years old. The menstrual period had commenced at the usual age, and continued to recur regularly, with an occasional attack of dysmenorrhœa. She was married at the age of twenty-three, had eight children, the youngest being then six years old. Parturitions were easy, lactation was abundant, and recoveries had been good. Menstruation had ceased without trouble in the spring of 1859.

About twenty years before she was seized with pain in the right side, so severe that she was confined to bed several days. The pain followed the course of the right ureter, and was accompanied with lithic acid deposit in the urine. Several years afterwards she had another attack of a similar character, and repeated attacks after that, always associated with lithic acid deposits. The last attack occurred on the 20th of August, 1860. This was the most severe, and continued two weeks. It was accompanied by frequent and painful urination, and with large white phosphatic deposits in the urine, attended with an offensive ammoniacal odor. Directly following this attack the tumor made its appearance, and she lost flesh and color, the skin assuming a lemon shade. The face was, at the time of her visit, somewhat reddened by a recent attack of erysipelas.

When the patient was in a recumbent posture on her back, with the abdomen exposed, the prominence of the tumor could be readily seen. It occupied the right side, was the size of the head of a new-born child, elastic, semi-fluctuating, and immovable. A horizontal line from the umbilicus intersected the upper third of the tumor. It pushed out the abdominal wall in the lumbar region, and extended inwardly to the median line, shelving down beyond it under a layer of intestines. Percussion over the tumor and over its outer boundary returned a dull sound, but towards the umbilicus the sound was semi-resonant, in consequence of the intestines

Fig. 11.



overlapping it. Between the ribs and the upper edge of the tumor, and between the groin and its lower boundary, and over the left side, the percussion sound was resonant. (See Figure 11.)

The pelvis was free, the uterus *in situ*, quite movable, and had no connection whatever with the tumor.

Specimens of urine passed in the morning and evening were collected and given to Dr. Drysdale for examination. He reported as follows: "The urine contained some small mucus clots, otherwise was clear and straw colored. Heat produced a cloudiness, which was increased by the addition of nitric acid.

"*Microscopic examination.*—The urine passed in the morning contained very few cells and no crystals. The urine passed at night contained a thin stratum of cream-colored deposit, which, when examined with the microscope, showed a cell resembling somewhat in appearance the granular cell, but which, by the addition of acetic acid, proved to be pus or mucus cells."

The diagnosis was cystic disease of the right kidney.

After the examination of the fluid by Dr. D., I wrote to Dr. Chandler, November 4th, 1860, as follows: "The examination of the fluid in your sister's case indicates some derangement of the kidneys, and, so far as that evidence goes, shows a direct or indirect connection of the tumor with the right kidney. It may, however, be a tumor independent of the kidney itself, yet located so near to it as to impair its functions by pressure. Still, the whole history of the case would seem to implicate the kidney in the difficulty. We must, however, wait and watch the progress of the disease. My great fears are that it is a case of colloid disease, although the urine does not indicate this."

A letter from Dr. Chandler, dated December 13th, 1860, said: "Some improvement in strength, but not in flesh; appetite not very good; no gaseous distention of the bowels; tumor consequently more prominent and protuberant, but not larger; fluctuation more distinct; walls of the sac thinner, and in my opinion a unilocular sac; not painful, and giving little inconvenience, except perhaps the fact of its existence having a depressing mental effect."

In the above case the points which distinguish it from ovarian tumor are clearly marked. The fixedness of the tumor in the lumbar region, the resonant space between the tumor and the pelvis, the overlapping of the intestines, the great mobility of the uterus, and its non-connection with the tumor, and the repeated attacks of renal trouble preceding the development of the cyst, all establish the above diagnosis.

I wrote to Dr. Chandler in order to learn the ultimate history of this case, and received the following answer, dated July 25th, 1871:

"DEAR SIR,—I well remember the case of my sister. It was a morbid growth originating in the right side in the region of the kidney, enlarging with rather unusual rapidity till it extended beyond the median line of the abdomen, and was accompanied by much pain and soreness, sickness of the stomach, loss of strength, and a considerable degree of emaciation.

"I believe, when you examined the case, you were of the opinion it was colloid cancer. After I brought her home, I directed the following mixture, viz.:

℞.—Syr. Sarsaparil. Comp. f℥iij;
Hydrarg. Bichlorid. gr. ij;
Potassii. Iodid. ʒiij;
Liq. Potass. Arsenit. fʒiij. M.

Dose, one teaspoonful three times a day,—generous diet, wine or porter, and occasionally iron.

"Some short time after using these remedies she began to improve. After the second bottle of the above mixture, the bichloride was omitted. The other three ingredients were continued, with a gradual increase of the iodide till it amounted to six or eight grains a dose. The improvement was regular and steady. The treatment was continued for several months,—the precise length of time I know not.

"Once last summer she was apprehensive that she was again to be troubled with it, but soon the symptoms causing the alarm passed away with some mild laxative and alterative medicine.

"She has improved in strength and health and has become quite fleshy."

Under the head of *Enlargement of the Abdominal Viscera*, other forms of tumor of the kidney will be discussed.

C. **Uterine cysts.**—Of the several forms of cystic tumors of the abdomen, apart from the peritoneal cyst already referred to, there are none that will puzzle the surgeon more than those which arise from the body of the uterus itself. Unlike cysts of the liver and of the kidney, the locality of its origin corresponds with that of the ovarian cyst, and its future development, at least so far as its mere enlargement is concerned, is accompanied by the same signs as those associated with the growth of an ovarian tumor. I am of opinion that in most cases of cysts originating from the external surface of the uterus, the very first condition of the disease is a solid fibroid tumor, extra-uterine, sessile, or pedunculated, and necessarily invested by a peritoneal coat. This tumor subsequently softens and liquefies, and being contained in its envelope of thickened peritoneum, becomes a fluctuating encysted mass, resembling the unilocular ovarian cyst. If this be correct, then the early history of the case, like that of the hepatic and renal cysts, will greatly aid the diagnosis. If the tumor has risen out of the cavity of the pelvis, it may be felt in the lower part of the abdomen as a hard, solid, and more or less round, movable mass, attached to the uterus. It will continue to enlarge, and, for a time, retain its peculiar firm fibroid character. In the course of its development, a point will begin to soften, and ultimately the whole mass will become liquefied. Such a case, watched closely from the beginning, could not readily be mistaken; but should the surgeon not be consulted until it had passed through these several stages, it would be impossible for him to decide correctly without resorting to other diagnostic means. The character of the fluid, as will be shown, will distinguish it from an ovarian cyst. The change of a fibroid tumor from a solid to a liquid form is also accompanied by a rapid impairment of the general health.

I shall now endeavor to illustrate these views by my clinical experience.

a. CASE XLII.—*A solid fibroid tumor of the uterus, becoming softened and liquefied, is mistaken for an ovarian tumor, and is tapped; autopsy.* July 8th, 1852, at the request of Dr. William Gardener, I visited Mrs. F. K., of Philadelphia, aged thirty-six years. At the age of seventeen she was attacked with a general stiffness of the body and lower limbs, so that she could not walk. This was accompanied by a severe pain in the side. At the age of eighteen she had a similar attack. She first menstruated when nineteen years old, and was perfectly regular afterwards. She had one child, which was three and a half years old at the time of my visit. During gestation she had a discharge of black blood at three different periods, supposed by her to be menstrual. After parturition, menstruation again recurred regularly. In January and February, 1852, the menses became black and offensive. In March following, while in the act of lifting her child from the floor to a chair, she felt something give way, like the breaking of a string, low down in the right side. This was accompanied and followed by great pain,—"pain enough to bring a child." The abdomen became very hot and so sore that she could not bear the slightest touch, continuing in this state for three or four days. About a week after she had been relieved she noticed a lump in her right side as large as a door-knob, and movable. It increased in size rapidly. During the above attack she had great pain in urination and frequent calls, which still annoy her. In the latter part of August she was again seized with intense pain and sent for Dr. Gardener, who ordered an anodyne.

In making an examination I detected a very hard fibroid tumor occupying the cavity of the abdomen, its shape and size being very much like the uterus at the seventh month of gestation. The uterus was central and free. The sound entered two and a half inches into its cavity, and disclosed the fact that the tumor was pedunculated and sprung from the body of that organ.

September 21st following, I examined her again immediately after a menstrual period. She had increased very rapidly in size, being larger than is usual at the full period of pregnancy. The tumor, however, had entirely changed its character: it was then elastic and fluctuating, particularly its upper portion, which was evidently cystic and contained fluid. It was globular in form and very prominent. The sound still entered the uterus two inches and a half, and took a direction towards the sacro-iliac junction. Motion given to the tumor was only slightly communicated to the sound. The uterus, near the pubes, was pressed down and wedged in the pelvis, its mouth looking forward and the body curved upon the tumor. Its texture was hard and the os small. The groins and external genitals were much inflamed, the labiæ were hard and unyielding, the induration extending partly into the vagina.

October 4th, the patient having increased much more in size, and suffering great agony, I attempted to relieve her by paracentesis, using for that purpose a large trocar. A few drops of fluid only escaping, I passed the uterine sound through the canula, and it was arrested by a resisting mass. After probing in various directions, the sound, by considerable pressure, was forced backward and upward into a cyst, from which escaped slowly about three pints of dark-colored fluid and a small quantity of blood. After this cyst was emptied, I partially withdrew the canula, and again replacing the trocar, I forced it upward and towards the right side to its utmost extent, with a view of entering a cyst in that direction. But no fluid escaped. I again used the sound as a probe, pushing it beyond the canula into another cyst, from which flowed about three pints of quite clear, transparent fluid. Both fluids were coagulated by heat. After tapping, both sides receded, leaving a central mass, hard and resisting, and covered with protuberances. This seemed to be the original tumor. The trocar had been passed through this hard body in order to reach the cysts, and, as a result of the continued and free manipulations, atmospheric air was readily admitted. The canula was withdrawn with difficulty, as the hard tumor seemed to cling to it. The patient bore the operation well.

October 12th, I saw the patient again. She menstruated after the tapping, and had considerable suffering. In twenty-four hours she had filled up to the same size as before, and at this date the abdominal distention was greater. The pulse had risen from 125 to 140. The tongue was red and glazed. The measurement around the umbilicus was forty-three inches; on the 9th of August it was only thirty-seven inches. The cysts, instead of being filled with fluid, were greatly distended with gas. The external genitals were more inflamed and indurated, and the vagina was abraded and sore. To relieve the flatulent distention of the cysts, I introduced in two places a small trocar, through which a large quantity of fetid gas and some fluid escaped. This had the effect of relaxing the walls of the abdomen. The solid tumor could again be felt, but it evidently was softening. On withdrawing the canula, it was found plugged up with medullary-like matter, and was discolored by the sulphuret of silver. The patient was much relieved by the tapping.

October 23d.—The cysts had again become greatly distended with gas, and upon succussion, a large collection of gas and fluid could be heard and felt fluctuating. The lower limbs were very much swollen, and a spot had ulcerated above the ankle, which had assumed an erysipelatous appearance. The pulse, however, was less frequent, the tongue was not so red, and the appetite had improved. The small trocar was again used, and a large quantity of the most fetid gas escaped, and a considerable amount of offensive fluid, resembling thick soapsuds or rich chocolate. Much more fluid, too thick to pass through the small-sized canula, still remained. To remove this, the large trocar was introduced through the old cicatrix, and fourteen pints of a similar fluid were evacuated. It was much thicker, extremely fetid, and filled with broken-down, degenerated tissue. The fibroid tumor had softened and liquefied, and most of it had disappeared. Some portion of it was still traceable, but had become much softer.

October 29th.—Soon after the last tapping, the swelling of the lower extremities diminished, and the pulse and tongue improved. At this visit I found the pulse 120, skin hot, tongue dry, and emaciation great. Through the large trocar I removed about one pint more of thick adhesive ropy fluid, like soft-soap, but a large quantity still remained. A tent of cotton wick was introduced through the canula and allowed to remain.

November 3d.—The patient had improved since the last examination. The tent was removed, and very little discharge followed, as the opening became plugged up with masses of degenerated tissue. I now decided to inject the cyst with iodine and iodide of potassium, as follows:

℞.—Tincturæ Iodinii, fʒvi;
Potassii Iodidi, ʒss;
Aquæ Fontanæ, f℥v. M.

About two fluidrachms of this mixture were added to a pint of warm water and injected, but in consequence of pieces of tissue blocking up the nozzle of the syringe there was difficulty in removing the liquid thrown in. By exhausting the syringe, several masses of tissue were caught in the nozzle and then withdrawn. Finally, between three and four pints of fluid, filled with débris of solid matter, were removed through the syringe by pressure, the sound, and a flexible catheter. Afterwards, a tent was introduced to keep the wound open. The patient bore the operation well.

November 6th.—The patient continued to improve. There had been no increase in size. About one quart of fluid was removed. Several large syringefuls of iodized water were injected and withdrawn. Finally, a much stronger solution of iodine was introduced, and a thicker tent placed in the opening.

November 8th.—After drawing off about one quart of fluid, I enlarged the opening, introduced a portion of gum-elastic stomach-tube, and injected a mixture of equal parts of the iodine compound and water, and afterwards closed the tube.

November 10th.—The tube gave exit to nearly two quarts of fluid. I introduced Bond's placenta-forceps through the opening, and removed a large quantity of degenerated tissue. The iodine solution, in full strength, was injected and retained. The gum-elastic tube was removed, and a glass tube with a wide rim was substituted by Dr. Gardener.

This treatment was continued until the cyst contracted to a small extent, and the glass tube in consequence took an inclination downward towards the pelvis.

December 14th.—Strong indications of recovery manifested themselves up to within a week of this date, when a change took place, great prostration followed, and she gradually sank, and died of septicæmia.

A post-mortem examination discovered no traces of recent inflammation in the abdominal cavity. There was an old adhesion uniting the cyst to a portion of the small intestine near the ileo-cæcal junction, and also some old adhesions in the pelvis. The cyst had contracted to a very small size, and seemed to have lost all vitality, to have degenerated as the tumor had done. It was thought to be peritoneal. The original fibroid tumor had disappeared, except a portion as large as a hen's egg, which occupied the right side of the fundus uteri, and appeared to be the pedicle of the shriveled cyst. This pedicle was fibroid in character, and was movable on the uterine tissue. The remaining portion of the uterus and ovaries was healthy.

The above case is intensely interesting and instructive. The rapidity with which liquefaction of the tumor had occurred was remarkable, as this is usually a slow process. No doubt the inflammatory action which was set up mainly contributed to this result. The prospects of recovery were becoming quite flattering until the patient was overwhelmed by septic poison. If the vital powers could have withstood the influence of this poison, there is no question but that the tumor could have been destroyed and her health restored.

I wish to observe, also, that in its earliest history I had pronounced the tumor to be a *uterine* fibroid, but as the cystic character became so rapidly developed, I concluded it to be a fibroid tumor of the *ovary*. In either event, as it was satisfactorily proved to be pedunculated, it was a removable tumor by gastrotomy. The propriety of an operation was discussed and decided on, and the 9th of October was fixed for that purpose. Why it was omitted will be explained by the following memorandum in my case-book: "To-day the patient had decided to have the tumor removed, but in consequence of the menses having appeared, the operation was postponed, agreeably to her wish, until the 12th." On the 12th the record is: "We again assembled for the purpose of operating, but the symptoms were so forbidding as to cause us to decide against the operation."

It will have been noticed that one very important means of diagnosis in this case was omitted,—that of the microscopic examination of the fluid. This would have enabled us to have arrived at a more definite conclusion as to its origin, whether uterine or ovarian. This, however, in reference to the operation of extirpation, was a matter of minor importance, as the risks of the operation in either case would have been the same. It may naturally be a matter of inquiry whether this patient was afforded the best chance of life by omitting the operation.

b. CASE XLIII.—*A large uterine cyst, with a secondary cyst in its walls, mistaken for an ovarian tumor, and gastrotomy performed.* October 3d, 1859, I visited Mrs. A. S., in consultation with Dr. Samuel Woolston, of Vincenttown, New Jersey. She was forty-two years old, considerably emaciated, and very much broken down in general health. Menstruation was unusually delayed, was regular, painful, and profuse. She married at the age of twenty-nine, and has had four children, the youngest being six years old. Her parturitions were not difficult, lactation was free, and she nursed her children one year. She still menstruated regularly, and after the appearance of the tumor suffered severely from dysmenorrhœa. For several years she had bad attacks of bearing-down pains at intervals, and at the time I saw her this sensation was constant.

She first noticed a lump in the lower part of the left side in October, 1858, and consulted Dr. Woolston the following Christmas. It was then as large as a goose-egg, elastic, and movable. He prescribed an ointment, after the use of which the patient thought there was a slight diminution in size. The patient considered herself pregnant, and Dr. W. coincided in opinion with her. On the 25th of March, 1859, she supposed that she had quickened. She continued to feel motion, as she thought, up to the 1st of May, after which all motion ceased. The natural inference was that the child was dead, and that it continued to occupy the cavity of the uterus up to the time of my visit. Among the several surmises in reference to her condition, Dr. Woolston supposed it might be uterine dropsy; and, acting on this opinion, he attempted to pass a catheter into the uterus in order to tap it, but after entering the os, finding that nothing but blood escaped, he desisted. Then again he thought it might be a case of hydatid mole of the uterus.

During all this time the patient had rapidly increased in size, and when I saw her she measured round the umbilicus forty-four inches, from sternum to pubes twenty-four inches, and between the two superior spinous processes of the ilia, in front, twenty-six inches. The xiphoid cartilage was tilted up by the tumor to an angle of forty-five degrees.

The abdomen had a pretty uniform shape, and retained the same form in different positions of the body. There was dullness on percussion everywhere, except in the superior part of the epigastric region. No ridges or inequalities could be discovered throughout the abdomen. Fluctuation was distinct and unimpeded over the whole abdomen. The uterus was crowded back to the sacrum. The sound entered two and three-quarter inches. She was then menstruating.

As all the signs of a unilocular cyst were present, I at once expressed my belief in the existence of *ovarian* disease, but stated, however, that the question could be positively decided by tapping. This I was not prepared to do at this visit.

The examination threw new light upon this case, heretofore obscure, and afforded the patient hope of a restoration to health. After due consideration, she decided upon an operation, and a week from that day was appointed for the purpose.

October 10th, 1859, I removed the tumor. During the operation there escaped two pints of clear, yellowish fluid, evidently from the peritoneal cavity; thirty pints of a dark brown-colored fluid from a large cyst; and three or four pints of a lighter-colored fluid from a small cyst attached to the walls of the large one. Both cystic fluids were heavy, dense, and very adhesive. The wall of the cyst was thin and membranous, and resembled thickened peritoneum. The pedicle was very short, almost sessile, thick and fleshy, originating from the uterus, and very similar to that of a fibroid tumor, appearing to be composed partly of an extension of the uterine tissue itself. The locality of the pedicle was on the left of the fundus uteri, immediately anterior to the origin of the Fallopian tube. It had no connection with either ovary. The body of the uterus and both ovaries were healthy.

A specimen of the fluid from the large cyst was collected and given to Dr. Drysdale for examination, without informing him of the nature of the case. This was done with the view of testing his ability to recognize its character by examination with the microscope. Dr. D. reported that the fluid, removed from Mrs. S. on the 10th of October, was *not ovarian.* His report reads: "After standing a few hours, the fluid separated into two portions—a coagulum, which filled one-third of the vessel, and a clear, bright-red fluid, which was very thin.

"*Chemical examination.*—The specific gravity was 1020,—its reaction alkaline. The thin portion of the fluid coagulated when heated. Considering it to be serum, a further examination was not undertaken.

"*Microscopic examination.*—After a prolonged and careful search nothing could be found in the specimen but blood corpuscles."

The above case, at the time it came under my observation, possessed marked signs of a unilocular ovarian cyst. Had paracentesis been performed, removing the fluid from the large cyst, the idea of it being an ovarian tumor would have been strengthened by developing the presence of an additional cyst,—the existence of secondary cysts in the walls of a parent cyst being strongly confirmatory of ovarian disease. The appearance of the fluid itself would have induced the belief that it was ovarian in character. It was a brownish-colored, dense, adhesive, coagulable fluid. So evident were all these points, that had no opportunity occurred of making an inspection of the abdominal cavity, I should have discredited the evidence adduced from the microscopic examination, and believed the case to be one of disease of the ovary. This one fact, therefore, is an important lesson in diagnosis, and teaches us the indispensable value of microscopic aid in pathological investigations. It recalls to mind a statement made to me many years ago by Dr. Waldo J. Burnett, the author of the prize essay on "The Cell," *that he could distinguish ovarian fluid from every other by the character of the cell.*

The remarks, however, respecting the physical characters of the fluid require some modification. Dr. Drysdale says, "It separated into two portions—a coagulum, which filled one-third of the vessel, and a clear, bright-red fluid, which was very thin." So far as my observation goes, a fluid possessing such properties is never taken from the cavity of an ovarian cyst. I shall have occasion again to refer to this fact, in order to show that the character of the fluids of dropsy is of great importance in differential diagnosis. *A fluid which gelatinizes or coagulates on exposure to the air is not, in my opinion, ovarian.*

What was the character of this tumor in the early period of its history? The constitution and site of its pedicle, and the anatomical peculiarities of the cyst, indicate that it originated as a fibroid tumor of the uterus, and that it subsequently softened and liquefied, and assumed the usual characteristics of encysted dropsy. Whether or not it originated as a fibroid tumor, the examination proved that it was not an *ovarian* cyst, and also that it took its origin from the fundus of the uterus.

Therapeutical considerations.—The importance of distinguishing these uterine cysts from ovarian tumors is magnified when their remedial treatment is taken into view, for with the data furnished by these and other cases, now to be mentioned, I shall hereafter hesitate long before deciding upon their removal by the abdominal section. The cyst wall being formed of peritoneum, and the internal surface having been the adherent, not the exhalant, surface, it would be reasonable to expect that the disease, if not malignant, would be curable by less formidable means. Sometimes cases of ovarian dropsy are reported as having been cured by tapping. I have had cases of this kind myself, at least so viewed at the time, but since rendered doubtful, as some of the diagnostic tests were then overlooked. Such cases of cure are very rare. The following have come under my own observation:

a. Case XLIV.—*A cyst diagnosticated to be ovarian; tapped; no return of the fluid for twenty years.* August 22d, 1848, I was consulted by Mrs. E. C. W., aged thirty-five. Menstruation commenced in her thirteenth year, was suspended by taking cold, and afterwards returned with pain. She has always had dysmenorrhœa with a clotted discharge. In 1838 she was under the care of Professor Samuel George Morton, who supposed she was pregnant, but if so the ovum was discharged at two months. For a long time, about this period, her breasts would enlarge and contain milk during the menstrual periods. She has never had children. The following history is condensed from a written statement made by herself:

In the spring of 1838, after suffering severe pain in the back and groins, and having profuse, clotted, and offensive menstrual discharge, she discovered a tumor, as large as an egg, in the right groin, which Dr. M. considered an ovarian tumor. In 1839, Professor Samuel Jackson took charge of her case. He at first diagnosed her condition as due to hypertrophy of the uterus, and, after putting her under a course of severe antiphlogistic treatment, concluded it was a malignant tumor, which would soon terminate fatally. She then underwent homœopathic treatment in 1840, and in 1841 Professor Hodge was consulted, who advised her to discontinue medication. Dr. Sharpless took charge of her in 1844, and after curing her of granular inflammation of the os and cervix uteri, she was much more comfortable, although her size had increased. In 1845 the enlargement of the abdomen increased rapidly, accompanied by great suffering, high fever, and inflammation of the skin over the hypogastric region, so as to lead to the supposition of the formation of an abscess. The distress and distention became so great in 1846, that Dr. S. attempted to tap her. He introduced the trocar, but it entered a *solid* mass and no fluid escaped. Allowing the canula to remain, he went for Professor George McClellan, whom he brought to the bedside. Dr. McC., inclining the instrument towards the right side, pressed it through a dense structure clear up to the hilt and entered a cyst. Twelve pints of fluid were discharged, but very slowly, requiring five hours for the purpose. The fluid was so thick it had to be broken up through the canula in order to get it out. It resembled a mixture of Spanish-brown and water, and after standing some time separated into two parts. The patient soon improved after this, and all pain left her, except at the lower part of the spine. The case was considered by these gentlemen to be one of ovarian tumor.

I was consulted in 1848 by Mrs. W., for neuralgia, particularly for coccyodynia, and after receiving an account of her history I proposed an examination. I would premise that she was disposed to corpulency, which was most marked in the abdominal region, and which greatly obscured the percussion sounds. When on her back, the abdomen was somewhat prominent, not more so than the amount of adipose tissue would account for. The lower portion of the right side, extending to the median line, had a dull percussion sound, the left side was resonant. The uterus was pressed upward and forward against the pubes, was immovable, and was healthy. The sound entered three inches. The posterior wall of the vagina was much straighter than usual and had a resisting body behind it. This body was also felt through the rectum. The os coccygis was very sore to pressure.

I continued to be the family physician of Mrs. W. for years, up to the period of her death, and it was not until May 6th, 1866, that I was requested to visit her in consequence of a return of her old trouble. She was then fifty-four years old. For the last year the abdomen had been increasing in size, and she was emaciating. She was as large as a woman at full period. The uterus was entirely above the pubes, the sound entered four inches. The pelvis was occupied by an elastic cyst, back of the vagina. A cystic tumor occupied the abdomen, but fluctuation was indistinct.

June 2d, 1866, the suffering of the patient becoming extreme, she begged to be tapped. I operated with a large, long trocar, and drew from the peritoneal cavity about two pints of ascitic fluid. The canula was felt resting against the walls of a cyst. The trocar was introduced, and, after passing deeply through a resisting fibroid mass, entered a cyst, from which fourteen pints of a yellowish-brown or strong coffee-colored fluid were removed. It was opaque and thick, and coagulated firmly by heat. The symptoms, however, becoming more grave, she died the 25th of June, 1866.

Ten hours after death my son-in-law, Dr. David Burpee, made a post-mortem examination. There was a large amount of adipose deposit in the walls of the abdomen. The tumor was very adherent everywhere, and contained a large quantity of tissue resembling in color and consistency a decomposed placenta, and was seen to originate from the right side of the uterus, its pedicle being sessile, thick, and fleshy.

b. CASE XLV.—*A cyst diagnosticated to be ovarian tumor; tapped; no return of the fluid in twenty years.* July 13th, 1852, I visited Mrs. H. H., of Camden, New Jersey, in consultation with Dr. Cooper. She was forty-eight years old. Menstruation commenced at the age of sixteen, was always regular, and rather painful. At twenty-one years of age she married, and had five children, the youngest being thirteen years old. The labors were easy, and recoveries good. The menstrual flow returned regularly until the April preceding, at which time it ceased. Her health has been uniformly good.

She first noticed a tumor in her right groin about eight years before, when it was as large as an egg. She could readily feel it every morning before passing water, but when the bladder was emptied it would fall into the pelvis. Ever afterwards she had trouble with the bladder, urination being frequent and the quantity of urine small, and of the color of brick-dust. The tumor gradually increased in size.

She was much larger than a woman at the full period of pregnancy, and the abdomen was uniform in shape. Fluctuation was distinct, and impressed me with the idea of a thick fluid, or of a fluid inclosed in a thick-walled cyst. All the characteristic signs of an ovarian tumor were present.

I removed eighteen pints of dark-colored, opaque fluid, which ran away very slowly through a large canula. It was coagulated very firmly by heat. The collapsed walls of the emptied cyst could be felt after the tapping. Before tapping, the uterus was jammed down against the perineum. After tapping, the uterus was more free and movable.

The diagnosis was ovarian tumor, and the arrangement was to remove the cyst when it refilled.

November 16th, 1856, Mrs. H. was on a visit to Philadelphia, and had an attack of tonsillitis, for which I was requested to see her. To my surprise there had never been any return of the fluid since she had been tapped, and this affection of the throat was the only sickness she has had since. I examined the abdomen carefully and could find no enlargement. I understand upon inquiry that she has remained perfectly well up to the present time.

c. CASE XLVI.—*A cyst diagnosticated to be ovarian; tapped; no return of disease for six years.* May 25th, 1865, Madame L. F., of Baltimore, Maryland, called at my office to consult me. She was thirty-six years of age, of small stature, and dark complexion. She first menstruated at the age of eighteen years, and was always regular. She married at the age of twenty, had four children, and the labors were difficult. She never menstruated while nursing, although some of her children nursed thirty months. The youngest child was six years old. After the birth of this child the menstrual flow was more profuse than before.

About two years ago, I had treated this lady for granular inflammation of the os uteri, and in March, 1865, she consulted me again, supposing that she had a return of the disease; but upon an examination I discovered an enlargement in the lower part of the abdomen. As the tumor closely resembled an enlarged uterus, and as the patient thought she might be two months pregnant, I declined making a critical examination at that time. When she visited me in May the tumor had increased in size. It extended to the umbilicus, was globular in shape, elastic, fluctuating indistinctly, movable in all directions, inclining towards the right side, although central in position. She had passed through a menstrual period, which was painful in character. A sound passed into the uterus two and a half inches, and was not disturbed by the motions given to the tumor. No disease of the os uteri was discovered by the speculum.

The patient was solicitous for an operation, but as the tumor was small, and her health good, I advised her against it; consenting, however, to remove it at some future day should it be thought advisable.

October 31st, 1865, the patient called to see me again. During the summer she had passed through a violent attack of inflammation of the bowels, and almost sank under it. Her size had increased.

May 2d, 1866, during the session of the American Medical Association at Baltimore, I visited Madame F. in company with my brother, Dr. John L. Atlee, of Lancaster, and Drs. Chatard, senior and junior. She had increased considerably in size, and was very solicitous for an operation. There was some doubt as to the real character of the tumor, as there was no distinct fluctuation. There was, however, a sense of vibration on percussion, and it was decided to tap her. This was done, and eight pints of dark chocolate-colored fluid were removed. As the last of the fluid was escaping, the canula was choked up by plugs of thick tissue. The fluid was not examined. After the tapping, the walls of the abdomen, which were quite thick from fatty deposit, subsided, and no ridges, nodules, or tumors could be detected.

With regard to the diagnosis, all agreed that it was ovarian.

June 25th, 1869, I made a careful examination of the patient: the abdomen was quite flat, and not a trace of the disease could be detected. I have understood that up to the present time, 1872, she has remained perfectly well.

It is to be regretted that in these two cases an examination of the fluids was omitted. The appearances of the fluids were so characteristic of ovarian dropsy that the shadow of a suspicion did not arise to the contrary, and it is only the remarkable result following the tapping that now creates a doubt of the correctness of the diagnosis made. If it had been known, through an examination by the microscope, that the ovarian granular cell was absent, it would have excluded the idea of the cyst being ovarian. But for the present all must remain in doubt, as both patients are still living and in good health.

D. **Peritoneal inflammatory cysts.**—The peritoneal inflammatory cyst is a form of disease which may closely resemble an ovarian tumor. In this particular form of cyst the inflammation is localized in a part of the peritoneum, or of the subperitoneal tissues, and is followed by an effusion of fluid, which is imprisoned in pockets formed by an agglutination of the serous surfaces, or accumulates in the areolar tissue, and separates large portions of the peritoneum from their attachments; thus, in either case, forming a cystic tumor, which is difficult to distinguish from an ordinary ovarian cyst. This is a very different state of things from that which occurs in ascites, or which is associated with tubercular peritonitis, as the fluid does not occupy the whole peritoneal cavity, but is inclosed within a distinct cyst, which is projected into the general cavity of the abdomen. So far as my experience goes, these inflammatory cysts originate in the region of the pelvis. The locality of the disease therefore corresponds with that of an ovarian tumor,—hence the difficulty of diagnosis is increased. The inflammatory cyst, however, is sensitive to pressure, and more or less immovable. It is accompanied, also, by pain, great constitutional disturbance, emaciation, and the usual symptoms of acute disease. An ovarian cyst, unless in a state of inflammation, is usually free from tenderness, is more or less movable, and does not so rapidly impair the general health. Still, there are cases even of ovarian cysts, which, in their origin and progress, partake of the acute character of the peritoneal inflammatory cyst, and cause as rapid a depreciation of the vital powers. (See Case III.) The inflammatory cyst, like the ovarian, is sometimes submerged in ascitic fluid.

Whenever doubt exists respecting the nature of the disease, tapping may be resorted to, and the diagnosis may be made by an examination of the fluid.

Should gastrotomy be undertaken in a case of inflammatory cyst, the operator will soon perceive, on exposing it, that he has not encountered an ovarian tumor. Instead of the dense, shining, white surface of an ovarian cyst, he will see a dull, brownish-colored tumor, having an extensive area of attachments, non-pedunculated, whose removal will be found to be impossible.

a. CASE XLVII.—*Peritoneal inflammatory cyst, resembling an ovarian tumor; exploratory operation; autopsy.* June 10th, 1871, I visited Mrs. S. W., widow, aged thirty-two years. Menstruation commenced at twelve years of age, was always regular, but rather profuse. She was married at the age of nineteen, had seven children—the youngest being seven years old—and two miscarriages, one at four, and the other at six months. She nursed her children twelve months, and the menses returned two months after parturition.

One year before my visit, after a severe attack of pain, she noticed an enlargement in the lower central part of the abdomen. She described the swelling as being hard, and she had difficulty in passing water, unless she lifted up the abdomen with her hands. She continued to suffer in this way for three months, when her physician pronounced her pregnant, although menstruation was regular. She then went into a hospital for one month, and the surgeons of the institution decided her condition to be tumor and dropsy. In December, 1870, Dr. K. took charge of her, but not relieving her by medical treatment, he and Dr. N. tapped her in April, 1871, removing four and a half gallons of adhesive fluid, of a light-green color. A tumor could be felt after the removal of the fluid in the right side, hard, and very sore to the touch. The tapping was followed by severe inflammatory symptoms. After this she was attended by Dr. M., who tapped her the second time on the 6th of May, removing two and a half gallons of a lighter-colored fluid, resembling urine. Two tumors—one on each side—were found, but they were not sensitive to the touch. May 20th she was tapped the third time, removing nineteen pints of a still clearer fluid, and her physician pronounced her disease ovarian tumor. The doctor, in a note to me, says, "I found when the water was taken away that she had two large tumors,—one occupying the right and the other the left inguinal region. The one on the right was firm and not easily moved, and appeared perfectly solid; the one on the left is softer, but in a fixed position."

I found the patient very much debilitated and emaciated, scarcely able to move in bed, apparently rapidly sinking, the pulse being very feeble and frequent. She was much larger than a woman at full period of gestation, and the abdomen was symmetrical in shape. All the characteristic signs of encysted dropsy were present. Fluctuation was distinct everywhere. The posterior wall of the vagina protruded beyond the vulva. The pelvis was occupied by a hard deposit, and the uterus was fixed in position, but admitted the sound two and a half inches. Urination was difficult.

I placed the patient immediately upon a tonic and sustaining course of treatment which somewhat improved the general symptoms, and then tapped her on the 18th of June, removing about thirty pints of dark, straw-colored fluid, which was slightly coagulated by heat. Being undecided as to the character of the dropsy, whether it was ascitic or encysted, I repeatedly percussed the abdomen as the fluid escaped, but at no time could discover the *usual resonance* of the floating intestines, yet as the abdomen diminished in bulk I could discover that the tumor in the right side was *immersed in the fluid.* After evacuating all the fluid, and while examining the abdomen before withdrawing the canula, I noticed a cystic tumor in the left inguinal region, and punctured it with the trocar, removing two pints of the same kind of fluid as that taken from the abdominal cavity, and which reacted to heat in the same way. The first fluid, however, was free of flaky deposit, but the last had small flakes, which sank in the fluid, and a small, hydatid-like body as large as a pea, which floated on the surface. There still remained the tumor in the right iliac region. This was more solid, and felt like a multilocular mass, and was but slightly movable. After tapping, the protruded portion of the vagina receded to a certain extent, and could be pushed into the pelvis.

The pelvis was still more or less occupied, and the uterus was more readily moved.

The two specimens of fluid were handed to Dr. Mears for examination. He reported that the specimen from the cyst, "containing the small vesicle, had a specific gravity of 1013, was of a dark color, was largely albuminous, and contained a large mass of fibrinogenous substance; a small quantity of granular matter with fragments of epithelial scales, was found on microscopic examination."

The other specimen had a "specific gravity of 1015, was somewhat lighter in color than the first, and contained very little granular matter, some oil globules, and blood,—no fibrinogenous substance.

"I do not think these specimens of fluid are from an ovarian cyst. The fluid, containing the fibrinogenous substance, is in all probability from the abdominal cavity, and is the result of irritation produced in the peritoneum,—possibly by a uterine tumor. Virchow (Cellular Pathology) has found this fibrinogenous substance in fluids drawn from the pleural cavity in a case of pleurisy,—he speaks of it as being present in fluids from the abdominal cavity. After removal of the coagulum, a fresh substance appeared on the day following, and the coagulative power lasted fourteen days. He regards it as a fibrinous exudation, and can be only produced as the result of some irritation [inflammation]."

In reviewing the case, I found it impossible to arrive at a positive diagnosis. It was plain that the large body of fluid was drawn from the cavity of the peritoneum, that the cyst in the left inguinal or lumbar region was not ovarian, but a peritoneal cyst, and it was thought that the tumor in the right inguinal region was in all probability a multilocular ovarian tumor.

The patient, having rallied somewhat upon the use of tonics and good diet, after the tapping, demanded an operation. I consented to examine the cavity of the abdomen, and on July 7th, 1871, in the presence of Drs. Mears, Burpee, Burmeister, and W. Lemuel Atlee, I opened the abdomen by an incision three inches in length. About two gallons of fluid escaped from the peritoneal cavity. I now carefully examined the contents of the lower part of the abdomen and of the pelvis, and found the two tumors and uterus embraced by one sheet of membrane, this membrane being reflected upon the abdominal wall so as to form a distinct cul-de-sac above the pubes, extending across from one ilium to the other. A sound was now passed into the uterus, entering two and a half inches, and ascended between the two tumors, so that its end was felt plainly as through a thin membrane. The left tumor was again tapped. Upon examining the more solid tumor on the right side it was found to be more cystic on its posterior wall, and a small trocar was passed into it, and about one quart of yellow fluid escaped resembling that removed previously by tapping, causing its walls to collapse. The surface of the cyst wall contained, here and there, papilliform masses, a bunch of which was removed for examination. The loose membranous mass seemed so adherent to everything about it that all idea of its removal was abandoned. The abdominal and pelvic cavities were both in a diseased condition. The peritoneum was highly congested, in some places roughened, and on the right wall of the abdomen it was covered by a patch of thick, yellowish lymph.

The hydatid-like mass was examined by Dr. Mears, who reported as follows: "I have submitted the papilliform mass taken from the surface of the cyst in the case of Mrs. W. to careful examination, and am satisfied that it is a true inflammatory development. It consists of a central mass, from which spring singly and in clusters pedunculated vesicles. The vesicles have thin, transparent walls, and contain a thin, clear fluid. Sections from different parts show, under the microscope, exudation corpuscles in fibrous tissues, with free granules and oil globules in large quantities. This villous growth is the result, therefore, of inflammation in the peritoneum forming the cysts. The smooth, white plate of fibrous tissue, which was observed in the parietal peritoneum upon the right side, is also the result of inflammation. The roughened surface of the peritoneum is another evidence of inflammation. I am inclined to regard the abdominal effusion as the result of the chronic peritoneal inflammation."

After the operation, the patient continued very much as before, and gradually sank July 18th, her death not seeming to have been hastened by it.

A post-mortem examination was made by Drs. Mears and W. Lemuel Atlee, and the morbid specimen was removed and carefully examined. The following is the report made by Dr. Mears:

"Emaciation was extreme. Cadaveric rigidity was not very well marked. The abdomen was tympanitic, but the walls were not very tense. The incision made at the time of the exploratory operation was united in its entire extent. On opening the cavity a small quantity of clear serum escaped. On examination there were found everywhere evidences of general acute and chronic inflammation. The parietal peritoneum was inflamed, and close examination discovered at many points evidences of chronic inflammation,—it was markedly thickened and its surface roughened: at one point on the right side there was a distinct lamina of fibrous tissue, and a mass of papillomatous growths was also attached to the surface. The omentum was rolled up and stretched across in a slanting direction to the right inguinal region, at which point it was firmly adherent. The intestines were firmly matted together by adhesions so that it was impossible to trace them. Projecting above the brim, and occupying the entire cavity of the pelvis, was a fluctuating tumor which gave exit to a large quantity of offensive purulent fluid. At all points this tumor was firmly bound to the walls of the pelvic cavity and the surrounding structures; a broad sheet of membrane extended across the anterior half of the pelvic cavity, attached to either border, so that it was impossible to pass the hand down between the uterus and bladder. Posteriorly, Douglas's cul-de-sac was obliterated. Dr. W. Lemuel Atlee, who made the section, removed the entire contents of the pelvic cavity, using great efforts to effect this, so strongly was the mass fastened in position.

"After removal, an effort was made to ascertain the relation of the parts involved and to determine the character of the tumor. It was found that the bladder, uterus, ovaries, rectum, and part of the vagina had been removed. The bladder was adherent to the anterior surface of the uterus. The uterus was imbedded in, and formed part of, the anterior wall of the tumor,—the broad ligament on either side completed the anterior wall. The posterior wall was formed by the layer of peritoneum which covers the anterior surface of the rectum and the posterior surface of the pelvic cavity. The superior wall or roof was formed by adhesion of the layer of peritoneum just referred to, and the peritoneum forming the superior borders of the broad ligament. The floor was formed by the floor of Douglas's cul-de-sac. The rectum was intimately attached to the posterior wall. The uterus was normal; the os was enlarged. The right ovary was in a condition of chronic inflammation; the left was normal, but atrophied. On the right side, extending from the right corner of the uterus, there were a number of subperitoneal cysts: the larger one had undergone suppuration, and contained a small quantity of purulent fluid. The internal surface of the cyst presented different appearances, —at points it was smooth: on the left were two pockets or depressions; on the right a large mass of papillomatous growths was attached to the surface.

"The development of the cyst was the result of pelvic peritonitis, involving more particularly Douglas's cul-de-sac, and the visceral layers of peritoneum covering the rectum behind, and forming the posterior leaflet of the broad ligament in front. The surfaces became attached superiorly, and thus was formed a cavity in which the exuded fluid was imprisoned. Drs. James Tyson and Harrison Allen have examined the tumor and coincide with me in opinion in regard to its character."

The autopsy in the above case clearly explains the absence of resonance, although fluid occupied the peritoneal cavity. The intestines being glued together in one mass could not be floated upon the fluid to respond to percussion. Some marked instances of this fact were mentioned under the head of Ascites, Section II., Chapter I. *B*.

b. CASE XLVIII.—*Peritoneal inflammatory cyst resembling ovarian tumor; exploratory operation; death on the third day.*

April 25th, 1871, while *en route* for California, I stopped at Platte City, Missouri, to see Mrs. G. W. B., at the request of Dr. J. T. Wilson, of Weston, who wrote, March 25th, 1871, as follows: "There is in a neighboring town a lady who has an ovarian tumor; I am not her physician, but my partner, Dr. Bonifant, who has seen her several times in consultation, thinks the cyst a multilocular one, with probably some adhesions, and which has pushed the uterus up above the pelvis and to the left of the median line, filling the cavity of the pelvis. It is supposed to involve the right ovary. She was confined about four months ago, at which time the tumor was first diagnosticated. During the latter part of her pregnancy she was unusually large, and was supposed to be carrying twins. Since her delivery, the tumor has grown rapidly, especially within the last two weeks, interfering somewhat with respiration. The woman heretofore has been healthy and robust." April 4th, he wrote again: "I received your letter yesterday, and as I had business in the neighborhood, saw the patient and her physician, Dr. Johnson, who thinks her condition is as good as it can get under the circumstances. I saw her nearly four weeks ago, and the tumor is twice as large as it was then. The patient keeps her bed pretty constantly."

I examined the patient in company with her physician, Dr. F. M. Johnson, of Platte City. Dr. J. informed me that at the time of the parturition, five months ago, he felt the tumor on the right side of the uterus and perfectly movable, and elastic as if it contained fluid. After the birth of the child—even through the fat walls of the abdomen—he could press his hand edgewise between the tumor and the uterus, and move them readily upon each other. Some days after childbirth, she was seized with a rigor, followed by fever and supposed peritonitis, and a rapid development of the tumor, with great constitutional disturbance and emaciation.

At the time of my visit, the patient was larger than a woman at full period. The shape was pretty uniform, the abdomen elastic and readily fluctuating in all directions. The percussion sound was resonant over the whole left side, and dull elsewhere. The pelvis was filled with an elastic tumor, and the uterus was elevated above the brim of the pelvis entirely beyond reach. Externally its body could be traced near the umbilicus to the left of the median line, and about one and a half inches from it.

Notwithstanding the case was very unfavorable for operation, in consequence of the acuteness of the original attack, the rapidity of development, the pelvic complication, the displacement of the uterus, and the general condition of the patient, I agreed to make an operation of exploration, believing at the time that the case was ovarian.

The following gentlemen were present: Drs. Johnson, Bonifant, Wilson, Shortbridge, Robinson, Coffey, and Beaumont. I made an incision in the linea alba and carefully opened the peritoneal cavity, so that I could examine the interior. The uterus was found to occupy the position stated, its fundus being above the umbilicus. The broad ligament of the right side was stretched obliquely upward across the whole body of the tumor in front of it and grasping it like the open hand. The left broad ligament was stretched in like manner obliquely downward, but to a smaller extent, across the left side of the tumor. The fundus of the uterus, and the upper edges of the two broad ligaments, formed a distinct ridge, extending across the tumor obliquely from the left inguinal region to the right hypochondrium. In the upper border of the right broad ligament was a healthy elongated ovary, with a cyst as large as a hazelnut in its distal extremity, and in the corresponding part of the left broad ligament was the elongated healthy left ovary. The pelvic peritoneum was raised out of the pelvis by the tumor so as to form a cul-de-sac of reflected membrane about midway between the umbilicus and pubes, extending across the whole front of the abdominal cavity. I now extended the incision to the distance of five or six inches, and passed my hand into the cavity of the abdomen, in order to ascertain more clearly the relations of the tumor. Satisfied that the tumor was not ovarian, and that it involved in its walls all the viscera of the lower part of the abdomen and of the pelvis, I abandoned the idea of its extirpation. It being cystic, however, I passed a large trocar into it above the left broad ligament near the uterus, and drew off fifteen pints of greenish pus and numerous large, stringy clots of fibrinous matter. The small cyst in the right ovary was also punctured and a thin, transparent fluid escaped. A tent was now placed in the cyst and carried out of the lower edge of the wound, and the latter closed with five or six sutures.

The patient died on the third day.

The above case was one of very peculiar interest. Before the operation, I diagnosticated the tumor to be ovarian. Afterward, I supposed that the original tumor was a pedunculated uterine fibroid tumor, that inflammation had supervened, and that an abscess had formed within it, which had caused it to partake of the characteristic signs of a unilocular ovarian cyst. Since the examination of Case XLVII., I have arrived at the conclusion that it was similar in character,—that is, a peritoneal inflammatory cyst originating in the pelvis.

E. **Acephalocyst hydatids.**—Another form of cystic tumors of the abdomen is the *Acephalocyst.* We know nothing of the origin of these peculiar cysts. They are usually developed in the abdominal cavity, especially in connection with the liver, and yet they have been discovered in the chest, in the pelvis, and various other parts, occupying very different structures, glandular, muscular, cellular, etc. They may partake of many of the characteristics of both unilocular and multilocular ovarian tumors, and a hasty examination may lead to error. Their most usual place of development being in the upper region of the abdomen, while the contrary is the fact in reference to ovarian tumors, it is not easy to make an incorrect diagnosis in the early period of their existence. As the swelling must necessarily correspond with the locality of the cyst, we will usually discover it in the epigastric, or one or other hypochondriac regions, whence it gradually increases from above *downward,* crowding, in its progress, the intestines into the lower part of the abdomen. (See Chapter III., Case XXXVII.) The tumor is usually rounded, projecting, elastic, and more or less fixed and immovable; or there may be several of such tumors well defined. In the course of its progress, the tumefaction sometimes suddenly disappears, followed by severe constitutional symptoms, arising from a rupture of its delicate walls and an effusion of the contents into the peritoneal cavity, and which may result in fatal inflammation. Even apart from rupture of the cyst, its locality, which may be in any part of the abdomen, is likely to implicate seriously the functions of the abdominal viscera, producing hepatic, gastric, intestinal, renal, and other derangements. As acephalocysts occasionally grow to an immense size, fill up and distend the whole cavity of the abdomen, the surgeon, when called at this late period, may find it exceedingly difficult, should he not be aided by an intelligent history of the case, to arrive at a correct conclusion. It is, therefore, necessary to weigh all the circumstances, and finally, if doubtful, prove the diagnosis by puncturing the cysts and testing the fluid removed.

CHAPTER IV.

DERMOID TUMORS.

UNDER the head of dermoid tumors I propose to include: A, Dermoid cysts of the ovary; B, Extra-uterine fœtation; and C, Monstrosities by inclusion.

A. **Dermoid cysts of the ovary.**—There is a rare form of ovarian tumor, which is called *dermoid*, from the fact that it contains tegumental structures, such as teeth and hair, with bone and *adipose* tissue. These tumors may contain a large quantity of fluid, and assume the ordinary characteristics of simple and compound ovarian cysts, and yet, as they are rarely suitable for extirpation, it will be proper, in this place, to consider their differential diagnosis. The fluid, in these cases, is not usually coagulable by heat, and at times contains fat, which passes through the canula in variously-formed shapes, sometimes of a very uniform size. It possesses none of the chemical and microscopical characteristics of ovarian fluid. At one time loose hairs will escape through the canula, and at another long and delicate locks will extrude themselves, and which will be found firmly attached within. Large bunches of hair, also, mingled with fatty matter, will often be found alone in these tumors; and at other times well-formed teeth, and bones, in different stages of development, will be associated with the hair. The hair varies in color in different cases. These cysts are found at all ages,—in childhood, during menstrual life, and in advanced age. They are subject to inflammation, suppuration, and are very prone to form attachments to surrounding structures. They rupture into the cavity of the peritoneum, or ulcerate through the coats of the intestines or of the bladder, and, discharging their contents, sometimes end in a perfect cure, and again terminate in death.

I shall not pretend to inquire into the nature of these curious structures further than to illustrate the distinctive diagnosis between them and ovarian tumors. Their origin has been a matter of controversy. Blumenbach thought they were produced by the nisus formativus independent of sexual congress. Coley and Meckel attributed them to incomplete fecundation. Haller considered them to be débris of a fœtus. Velpeau held a similar opinion. Cruveilhier believes that pilous cysts result either from coition producing extra-uterine fœtation, or are monstrosities by inclusion in the virgin. Others view them as epidermic products similar to what occur in other parts of the body. Steinlin considers them to be like skin cysts occurring elsewhere. And Ritchie, from whom I glean this historical synopsis, concludes that "every dermoid cyst of the ovary is an ovum which has undergone a certain amount of development; that it is a perverted attempt at parthenogenesis." Hewitt says it appears certain that they originate in the Graafian follicles; whether in the follicle itself or in the ovum which it contains, he was not prepared to discuss.

Kiwisch, in his "Clinical Lectures," page 230, says: "The origin of these different neoplasms has often been the subject of scientific discussion, and the belief was that the formation of bones and teeth must be explained by conception, and rudimentary fœtal formation; but many facts were also adduced against this assumption, so that the hypothesis is generally abandoned. The most essential of these facts are, that we find similar neoplasms in other sacular tumors in the most different organs, and even in man, and immature women, although not in such quantity as in the ovaries; lastly, that the bones and teeth found, in general belong to anything but fœtal forms, while fat, hair, and formation of bone belong to a similar process, because they are always found in combination, and we are not obliged to explain the formation of simple adipose cysts as fœtal rudiments."

a. CASE XLIX.—*Dermoid cyst of the ovary in a virgin, containing bone, teeth, hair, and fatty matter; tapped.* August 27th, 1851, I examined Miss A. L., aged twenty-three years. Menstruation began at the age of fifteen, and had been perfectly regular, with one omission twelve months before.

The abdomen commenced to enlarge five or six years ago, and gradually increased in size until it was noticed by others. She thinks the enlargement was general, not confined to any particular part. In August, 1850, she was seized with pain in the left side, after which she noticed a lump in the same place as large as an egg, which was movable. She was suffering from pain in the groin and back, and from symptoms of dyspepsia. The urine had to be passed often, and sometimes would suddenly stop flowing. She had headache, nausea, and difficulty of breathing.

The patient was quite small, delicate, and girl-like. Compared with the size of her body, the abdomen was very large, and pretty uniformly distended,—the greatest protuberance being on the left side, but the longest diameter from the right hypochondrium to the left inguinal region. The whole abdomen was elastic and fluctuating. Girth thirty-seven inches. The hymen was intact, the vagina narrow, and the uterus small.

The diagnosis was unilocular ovarian dropsy.

September 11th, in company with Professor W. R. Grant, I tapped the patient, removing sixteen pints of a pale, greenish-colored fluid, resembling the liquor amnii as stained by a partially decomposed fœtus. The fluid was not coagulable by heat or nitric acid. There issued from the large canula, following the fluid, about half a pint of a fatty or lardaceous substance, and with it a tuft of very fine, delicate hair, eleven inches in length. After all this matter had escaped, I slipped the canula over the lock of hair, which I attempted to remove. This I could not accomplish, as it was attached too firmly to a body within as large as the fist, which was quite movable in the abdomen, and was dragged up against the opening made by the trocar on pulling the lock of hair. I then cut off the hair close to the wall of the abdomen, and the mass receded.

The patient, although more comfortable after the tapping, continued to lose strength and flesh, and by the end of September there was again some accumulation of fluid. This, however, disappeared suddenly in the beginning of November, in consequence of the formation of a communication between the cyst and the bowel, and through which the contents entered the rectum. In spite of supporting treatment, her health declined, she became cachectic, and was troubled with cough and diarrhœa. Died January 15th, 1852.

The next day a post-mortem examination of the body was made by Professor Grant, but as I never received his notes of the autopsy in consequence of his death soon after, it is impossible to give the details. The tumor, however, was removed. Within the cyst was a mass of fatty matter, enveloping bones and teeth, and it was to this mass that the lock of hair was attached. The specimen was preserved, and subsequently placed in the hands of Dr. Drysdale for examination, who made the following report:

"*Examination of an ovarian tumor, November 24th*, 1860.—The specimen consisted of the uterus and its appendages, the right ovary forming a cyst, to which adhered a portion of the large intestine.

"The uterus was healthy, with the exception of an eversion and discoloration of its anterior lip. The left ovary and Fallopian tube were also healthy, so far as could be recognized after such a prolonged submersion in alcohol.

"The right Fallopian tube was entirely free from any connection with the cyst, except the attachment of the Fallopio-ovarian ligament.

"The cyst was of a globular form, and measured about six inches in diameter; its walls varied in thickness from one-quarter of an inch to the thickness of a wafer, and were covered externally with peritoneum.

"The superior portion of the posterior external surface of the cyst was firmly united to the cæcum, and, on the internal surface of the bowel, corresponding to this adhesion, was a small perforation which might have communicated with the interior of the cyst; but it cannot be positively stated that it did so, as the adhesion between the bowel and the cyst, at this point, had been torn in a former examination.

"To the internal surface of the cyst, at its upper and posterior portion, was firmly attached a solid oblong tumor, nearly four inches in length, and one inch and a half in thickness, one end of it being firmly imbedded in the walls of the cyst, opposite the point of its attachment to the bowel.

"In this portion of the tumor some bony matter was inclosed, which was cut down upon and removed. It consisted of two pieces of bone, the smaller piece having a close resemblance to the vomer, while the larger bore some likeness to the sphenoid. The smaller bone penetrated the wall of the cyst, and, when dissected out, left an opening in the cyst wall, which, before the adhesions between the bowel and the cyst were destroyed, probably communicated with the perforation in the cæcum, so that we may suppose that these bones would have eventually made their way into the bowel.

"A large bony mass had been removed from the free end of this oblong tumor, and was suspended in the jar containing the specimen. A superficial examination of this mass might have led to the supposition that it was an imperfectly developed superior maxilla, but a careful study proved it to be an aggregation of alveolar processes joined by bony matter, and containing eight teeth, one of these having no enamel and being rudimentary.

"An examination of the specimen, which is placed in a jar for preservation, will show that the lower surface of the bone terminates, on the right side, in the alveolar process of a tooth which has been removed, and which corresponds with the second deciduous molar; on the left, in a deformed canine tooth. To the inner side of this canine is another molar, which is so surrounded with bone that it could not be dislodged without destroying the specimen: between this molar and the socket of the removed molar is a small incisor. Just above this last-named tooth, and in the centre of the bone, is a canine, and above this again, and on the anterior angle of the superior surface, is imbedded another tooth. About the middle of the surface on the right side is an imperfectly-formed incisor. These teeth have been described as canine, molar, etc., as they correspond very closely in appearance with the normal deciduous teeth. The intervening bone, with its remaining surface, presents nothing remarkable. A microscopic examination of it proves it to be true osseous substance.

"The two incisors, which correspond with the lateral incisors, and one of the canine, were lying loose in the jar. One of them was inclosed by a sac. These teeth were replaced in their sockets and retained by means of wax."

A specimen of the hair was presented for examination to Peter A. Browne, Esq., LL.D., author of "Tricologia Mammalium." He informed me that he was able to identify hair that came from the ovary. He sent to me the following report of his examination:

"*Examination and description of hair of a fœtus, presented by Washington L. Atlee, M.D., April*, 1852. *General appearance.*—That of the pile of an infant of the oval-haired species.

"*Length.*—Greatest, seven inches; natural.

"*Shape.*—Oval; some slightly depressed upon one of the conjugate axes.

"*Diameter.*—One-three hundred and twelfth ($\frac{1}{312}$) by one-four hundred and sixteenth ($\frac{1}{416}$) of an inch.

"*Color.*—Blonde; lustre considerable.

"*Direction.*—

"*Indirection.*—Flowing,—inclining to curl.

Ductility, Elasticity, and Tenacity:

With	220	grains,	one inch	stretched	2-90ths	of an inch.	Elasticity entire.	
"	320	"	"	"	3-90ths	"	"	
"	420	"	"	"	5-90ths	"	minus	1-90
"	470	"	"	"	13-90ths	"	"	3-90
"	520	"	"	"	18-90ths	"	"	7-90
"	570	"	"	"	33-90ths	"	"	16-90
"	620	"	"	"	38-90ths	"	"	20-90
"	670	"	"	"	41-90ths	"	"	24-90
"	720	"	"	"	44-90ths	"	"	27-90
"	770	"	broke.					

Fracture compound.

"*Button.*—Enveloped in a white, opaque, cellular substance, which detaches upon maceration and exposes the button—in a shriveled state.

"*Shaft* partly—*i.e.* near the posterior extremity—enveloped in the same substance as the button. Cortex squamose. Canal for the conveyance of the coloring matter; but the coloring matter interrupted.

"*Apex.*—All pointed.

"*Fibres*, of a crushed hair, white, opaque, and of the diameter $\frac{1}{3000}$ of an inch."

Thinking that the above case might have been one of extra-uterine fœtation, notwithstanding the hymen had been perfect and the vagina small and contracted, I made the most rigid examination into the character and habits of the patient, and was perfectly satisfied that these products were not the result of conception.

b. CASE L.—*Dermoid cyst of the ovary in a married lady, containing hair, and bodies resembling yellow mustard-seed; tapped.* December 23d, 1852, Mrs. Z. P., of Dover, Delaware, was sent by her physician, Dr. Isaac Jump, to Philadelphia, to consult me. He wrote me as follows: "When I first saw her at my office, about two months ago, she presented about the same appearance that she does now; her appetite was rather inordinate, inclining to ravenous, her bowels constipated, etc. I prescribed medicine for the purpose of regulating the bowels, and recommended a light digestible diet, and when she carried out my recommendations she felt better, and thought the swelling was somewhat relieved. About two or three weeks ago I was called to visit her in bed for the first time. Upon inquiry I learned that two days before she had soaked her feet in warm water in the morning, had ridden out immediately after and was caught in a shower,—it was about the time for the appearance of the menses. I found her with a high fever, full pulse, tongue furred, considerable pain and tenderness over the entire abdomen, but more in the left hypochondriac region. I bled her, gave cathartic medicine, etc., ordered a poultice over the abdomen,—found the pain and tenderness continued after the pulse had been reduced, and after a day or two ordered a blister over the abdomen. She was relieved at the time, but has had some pain since in the right side."

The patient gave the following history: She was twenty-eight years old. Menstruation began at the age of sixteen years, and was perfectly regular, but up to the time of marriage she suffered greatly for twelve hours before its appearance. The menstrual discharge was always free, sometimes clotted, and lasted for seven days. She married at the age of twenty-four, when the pain of menstruation diminished, but otherwise it was the same, until the summer of 1851, when it became very profuse, nearly amounting to flooding, and usually very much clotted. Three weeks before she had the attack referred to by Dr. Jump, it was accompanied by obstruction in the urine, and attended by great suffering. At the age of twenty-two she had an attack of chills, and pain in the lower part of the body, which lasted nine days. When sixteen years old, she had great obstruction in the urine, which was relieved on the appearance of the menses.

After menstruation commenced, she always had a large abdomen up to the period of marriage, when the abdomen gradually enlarged, and most rapidly during the preceding summer. Her appetite was rather craving. Pulse and tongue good, and she slept well. She had never conceived. Her mother died of disease of the womb and dropsy.

I examined the patient in a recumbent position. A very prominent and perfectly round tumor occupied the whole abdomen,—its central and most projecting part being in the umbilical region. It was uniform in shape, and free from all ridges and irregularities, and fluctuated in all directions. The tension of the subjacent cyst was greater than that of the skin. The abdomen, having been freshly blistered, I could not examine it as satisfactorily as I desired, but the percussion sound was dull over the whole surface of the tumor. On each side, deep down, the ascending and descending colon could be traced by percussion, though the sound was muffled. High up in the epigastrium it was resonant. Girth round the umbilicus thirty-five inches, and distance between the two superior spinous processes of the ilia eighteen inches.

The uterus was retroverted and movable. Between the uterus and pubes a tumor could be felt, which evidently was part of the abdominal mass. The sound entered two and a half inches, its convexity looking towards the right side. On moving the tumor in the abdomen, no motion was communicated to the sound in the uterus, and, on moving the sound, no impulse was transmitted to the tumor. When, however, a sudden impression was made upon the uterus with the finger in the vagina, the motion was conveyed through the tumor to the hand on the abdomen. No hemorrhage attended the examination.

On making an examination with the speculum I discovered a polypus, as large as a filbert, filling up the os tincæ, and attached far in the interior of the uterus. This explained the uterine hemorrhage.

The diagnosis was ovarian dropsy.

December 25th, I removed the polypus with the bistoury. Its attachment was high in the uterine cavity, and its pedicle one inch in length. Very little bleeding followed. The stump was touched with the solid nitrate of silver. Two days after the patient returned home.

October 5th, 1853, Mrs. P. again came to the city, desiring an operation for the removal of the tumor. The size of the abdomen had considerably increased, her suffering was augmented, the general health had diminished, and she was emaciating rapidly. She now measured round the umbilicus thirty-seven inches, and between the superior spinous processes of the ilia twenty inches.

October 6th.—In order to test the diagnosis, as well as to decide upon the propriety of an operation, I tapped her, removing seventeen pints of a limpid, pale-greenish fluid. This fluid was mingled with a large number of beautiful round seed-like bodies of a yellowish hue, resembling, both in size and color, yellow mustard-seed. They were all apparently of the same shape, size, and color. They were not inaptly compared by the husband to the roe of shad, or to the eggs of the king-crab or horseshoe fish. They were soft, capable of being mashed by slight pressure, but consistent. These granules obstructed the mouth of the large canula, so that the sound was constantly required to displace them. They continued to come away until all the fluid was withdrawn. Small hairs, resembling eyelashes, also occasionally were discharged. On drawing the sound out of the canula, at one time several small hairs, entangled in a few granules, were brought out attached to it. The whole amount of seed-like bodies, when strained, measured two pints.

The fluid, on being submitted to the action of heat, did not coagulate. The granules, acted upon by the same agent, melted down into one mass, but did not coagulate.

Portions of these products have been kept by me ever since. They have been tested by Dr. Drysdale, and ascertained to consist of fat.

After the operation, the abdomen was soft, flaccid, and not at all sensitive to the touch. By the closest examination, I could detect no tumor or cyst in the abdominal cavity. The uterus was found to have resumed its natural position, and was easily movable.

After paracentesis, the diagnosis was dermoid cyst of the ovary, and all idea of extirpation was abandoned, and the patient returned home twelve days afterwards.

Under date of October 29th, Dr. Jump wrote, "I was called to visit Mrs. P. about a week ago. I found her very much emaciated; she had considerable fever in the afternoon and evening, followed by copious night-sweats, and consequently was very much prostrated. There was some swelling of the abdomen, which the family thought was due to gas alone, but I am inclined to think otherwise. Her general health, at present, is improved, but the swelling continues to increase."

November 8th, Dr. J. wrote, "I have seen Mrs. P. to-day. I find that for the last week her general health, instead of improving, as at first, is declining rather rapidly. She is exceedingly emaciated; nothing left but *skin and bone.* Her appetite is fair; the food she takes, instead of contributing to the support of her system, appears to contribute to her disease. The swelling is increasing rapidly, and she is now complaining of oppression in breathing, and wishes to be relieved by a second operation. I have promised to operate in a day or two, and yet I am afraid her very feeble condition will hardly bear up under the operation."

November 13th, Dr. J. again wrote, "I tapped Mrs. P. on Friday, the 10th instant, and took from her about a gallon and a half of fluid, which was extremely offensive, so much so that we could scarcely perform the operation without vomiting. Some gas escaped, of course of the same odor. Mr. P. said that the appearance of the fluid was very much the same as that which you took from her, and he thought, too, that there were not quite so many of the seedlike particles.

"I believe she is rather better than before the operation,—at least she is more comfortable. I forgot to mention the escape of two hairs with the fluid. I will add that the silver canula was blackened by the fluid, and no rubbing would restore its color.

"I will keep you advised of her condition, and, if the family will allow it, should the case prove fatal, will make the autopsy and furnish you the report."

Mrs. P. died very soon after, and I regret to say that no examination was made after death.

c. Case LI.—*Dermoid cyst of the ovary, containing bone, in an unmarried lady; tapped frequently; autopsy.* In a letter dated October 24th, 1859, from Dr. William Hayes, of Lewisburg, Pennsylvania, he incidentally referred to a case of great interest, as follows: "I have a case in hand at present possessing some interest, from the fact that Nature is making considerable effort to rid herself of the difficulty. The case is an unmarried female, and of at least fifteen years' standing. I have tapped her frequently, and the last time (probably eighteen months ago) the fluid was so gelatinous that I could not obtain more than two quarts, and that, too, exceedingly offensive. The usual discharge was two and a half gallons. A few weeks after the last operation, the integuments over the umbilicus gave way, and there has been more or less discharge ever since, amounting many times to several ounces a day. Within a few days another opening has formed three or four inches below the umbilicus, and is at present discharging. The tumor is very firm and uniform, at least I cannot discover any lobes. If this patient was not so exhausted, I would recommend, if not try, the operation of ovariotomy."

February 2d, 1860, I visited Lewisburg and examined the patient, Miss L. B., the same evening. She was forty-three years old. She commenced menstruating at the age of fourteen, and continued to be regular afterwards. For several years after puberty menstruation was always preceded by sickness of stomach, which would immediately disappear when the discharge occurred. Its duration was three or four days, and the quantity rather profuse, and it was followed by leucorrhœa. At that time her health was generally good.

At the age of twenty-four she first felt a swelling in the left side above the groin, and which for five years was regarded as an enlarged spleen. Previously to this she never had any menstrual irregularity. The tumor was discovered at a monthly period, in consequence of her having suffered much more than usual. She had no recollection of the tumor having been movable, or that it changed position on turning the body. At forty years of age she became quite irregular, there being intervals between the periods of several weeks, and once of several months. One year after, during a severe attack of neuralgia, the menses disappeared, and never returned. After this she enlarged more rapidly, while in its early period the growth of the tumor was very slow. She had been tapped eight or nine times, the fluid being rather dark colored. After the first tapping, the enlargement of the abdomen entirely disappeared, and a tumor, as large as an egg, could be felt low down in the left side as before. She did not fill up rapidly. Before tapping, there was difficulty in urination. The patient was a small-framed woman and much emaciated.

I examined her when in a recumbent position. The abdomen was not very prominent, and a globular mass occupied the umbilical region, the umbilicus being central. The umbilicus was obliterated by an opening, through which an offensive discharge escaped every three or four days. The day before about one quart of very offensive matter had been discharged. About two inches below this point there was the cicatrix of another opening, which had recently closed. At both places strong adhesions existed between the walls of the abdomen and the tumor beneath. The percussion sound was resonant in the epigastric and hypochondriac regions, and along the right side, and was dull elsewhere. On grasping the tumor and attempting to move it, it seemed to drag, as if adherent to the viscera, not gliding over the contiguous parts as a loose body. The introduction of the index-finger into the vagina was resisted by a firm hymen, and caused considerable pain. Back of the vagina the pelvis was occupied by an elastic mass. The uterus could not be found in the pelvis, and the vagina was pushed against the symphysis pubis. A wrinkled condition of the vagina behind the crest of the pubes caused me to examine for the os uteri at that point, but the sound could not be made to enter. Back of this there was a superficial sulcus, but no cervix perceptible. On probing this sulcus with the sound, it entered the cavity of the uterus four inches, passing up over the left side of the tumor, and extending to the level, and to the left, of the lower orifice on the abdomen. The introduction of the sound gave no pain. Upon moving the tumor in various directions, the sound followed all the motions, and, on moving the sound, its impulse was communicated to the tumor. This was so decided that it left no doubt of the existence of firm adhesions between the uterus and the tumor, as well as between the latter and the abdominal viscera.

A sound was then passed into the cavity of the cyst through the umbilical opening to the distance of several inches, and the whole interior examined. In several places it came against hard, crustaceous bodies, like bone. An offensive, sanious fluid escaped while using the sound. The patient did not complain of this part of the examination.

After the discovery of these conditions, of course an operation for the extirpation of the tumor was pronounced impracticable, and all idea of it was abandoned. In place of this injections of iodine were suggested, and the treatment subsequently was conducted by Dr. Hayes, and with the following results. He wrote February 15th, 1860, "Since you left, I have used the tincture of iodine on two different occasions, in the quantity of one ounce the first, and four ounces the second time. The discharge has been a pint or more daily, and exceedingly offensive,—containing, among other things, decayed cellular membrane, particles of earthy matter, flocculi of blood, etc. The anterior part of the cyst appears to be lined with crustaceous matter (indeed, you can scarcely introduce the probe on account of it), and in order to remove some (wherein I failed) a few days ago I enlarged the orifice to the size of an inch or more. To prevent its closing, I have used a tent, and on its removal every morning, a perfect flood escapes, of the character above described. The tumor is at present much better defined. Her general health is no worse, and if, through good, substantial food, we can keep up her strength, recovery is among the possibilities. Should nothing occur to prevent, I expect to use the iodine again this evening in an increased quantity."

Dr. H. wrote again on the 27th of November, "I take this opportunity of informing you of the death of Miss W. During the early part of the summer there appeared to be some amendment; but for the last few weeks her sufferings were extreme. She died about six o'clock A.M. of the 25th instant, and last evening, with the assistance of Dr. Christ and an office student, I made a post-mortem examination.

"There were four distinct cysts, three of them containing a gallon or more of a reddish, decomposed, offensive matter; the fourth—the one I tapped on several occasions—was very much contracted, the walls very thick and firm, lined throughout with crustaceous matter. The discharge from this cyst ever since you saw the patient, until her death, has been most offensive. The adhesions were general,—to the uterus, intestines, and very firmly to the right lobe of the liver, parietes of the abdomen, etc. Supposing you would feel some interest in the case, I have given you this detail. There is considerable discoloration of the lining of this last cyst, whether from the iodine injections or decomposition I know not,—the latter, however, I think must be the case. I have not yet examined the mass. I shall preserve it in alcohol."

I immediately wrote to Dr. H. requesting a more minute examination of the origin and character of the tumor, but failed in procuring it. I have, however, classified it, correctly I think, among the dermoid cysts of the ovary.

The foregoing three cases of dermoid cysts of the ovary are interesting, more especially on account of their dropsical character. They resembled ordinary ovarian dropsy so closely that until paracentesis was performed they were not distinguished from it. Indeed, there really was no error of diagnosis, as they must be considered, according to Ritchie, the best authority on the subject, ovarian tumors, having originated in the ovum itself. In regard, however, to the subject of ovariotomy, the diagnosis is of some importance, as it is not often that dermoid tumors are in a condition for removal.

There are cases of dermoid cysts of the ovary which are not characterized by any dropsical accumulation, and which are usually mistaken for fibroid tumors of the uterus. As they possess great interest in this connection I will not apologize for introducing them, and particularly as they may become dropsical at any stage of their development.

d. Case LII.—*Dermoid cyst of the ovary in a married lady, discharging its contents through the bladder.* February 8th, 1852, I visited Mrs. M. McM., in consultation with Dr. W. Gardener, for the purpose of examining a tumor in the lower part of the abdomen on the right side. She was fifty-two years of age. Menstruation commenced at the age of sixteen, but being ignorant of its nature, she washed herself with cold water, and became very sick for two weeks, although the discharge was not checked. The menses had always been regular. She married at the age of twenty-five, and has had ten children. In 1844, in consequence of a fright, she miscarried at four months' gestation. At the age of forty-seven she was delivered of her last child, and did not menstruate afterwards. In October, 1851, she noticed a sanguineous discharge, which only came while urinating, and it continued in this way—that is, during urination—for two days at a time. It would then cease for twenty-four hours, and again return,—thus pursuing this course up to the period when I saw her. For three days before no blood discharged, but the urine was dark colored and free from smell.

She first noticed the tumor, about two years ago, in the right side, and then it was as large as the fist. It gradually increased to double the size. About one year after, it assumed a more central position, sinking lower in the abdomen, and pressed upon the bladder towards the left side, giving so much distress that she had to pass water every few minutes, day and night, which was accompanied by great difficulty and pain, resembling labor-pain. These difficulties had continued up to the time I saw her, and had even increased in severity. Some weeks before she said the tumor fell lower into the pelvis, and appeared smaller, after which occurrence coitus was intolerable. I found her suffering such intense pain in the tumor and lower part of the back, that she was not able to attend to her domestic duties. The appetite was bad, tongue furred, and general health broken down.

I made an examination both by the vagina and rectum, and found a tumor occupying the right side of the pelvis. It was almost immovable, and projected slightly above the brim of the pelvis on the right side. Its diameter longitudinally was six or seven inches, laterally two or three inches, and antero-posteriorly four or five inches. It was hard and unyielding, and was very sore to pressure. It was firmly fixed in its position, and seemed wedged between the right side of the pelvic bones and the uterus, and yet a sound passed into the uterus easily to the normal distance, by which this organ could be readily moved without communicating any impulse to the tumor.

The opinion I had formed from the examination was, that this was a pedunculated fibroid tumor of the uterus, having become sealed to the wall of the pelvis by adhesive inflammation. Upon subsequent visits, however, I abandoned this opinion, as my attention was called more particularly to the discharges from the bladder. I had treated the fact of her passing bloody urine too lightly, and explained this circumstance by the supposition that it came from the uterus,—a very common occurrence in fibroid tumors,—although I noticed, at the time I sounded the uterus, that the sound came away unstained by blood. Indeed, the bladder symptoms imperatively demanded attention, for the patient suffered the most intense agony in voiding urine, such as is produced in cases of stone. On examining the urine from day to day, I found her passing the most curious substances through the bladder. These were bodies varying in size from a large shot to an ordinary-sized grape: pieces of tissue, like the membrane of hydatids, mucus, and a peculiar purplish-red deposit,—all in large quantities, and accompanied now and then with small hairs.

The diagnosis was now changed to that of dermoid cyst of the ovary.

March 2d, in consultation with Drs. William Gardener and John H. McClellan, I made another examination. Passing a sound into the bladder, I finally succeeded in finding an opening which communicated with the tumor. The sound was passed through this opening, and entered what proved to be a thick-walled cyst instead of a solid tumor, and its point could easily be detected impinging against the walls by the fingers placed externally at various parts of the mass. Before removing the sound, I moved it round the interior of the cyst, with a view of breaking up its contents. This gave the patient great pain, and was followed by a discharge of pus, blood, and hydatids.

I continued my visits occasionally until the 28th of April, during which time the tumor diminished in size, but the symptoms were not alleviated, and the general health of the patient declined more and more. This last visit was made with the intention of examining the tumor by means of an exploring needle through the walls of the vagina, for the purpose of arriving at the character of its more solid structure; but finding that a change had been made in the attending physician, it of course defeated my object.

I was informed afterwards by Dr. Gardener, that she died in the course of three weeks from hemorrhage, and that no autopsy was made.

The foregoing case, in the opinion of a most excellent surgeon, was one of encysted stone; but its whole history, from the beginning to its termination, points it out as a *dermoid cyst of the ovary*, which underwent spontaneous inflammation, resulting in adhesion to the coats of the bladder, and subsequent perforation, by which some of its contents were discharged with the urine.

c. Case LIII.—*Dermoid cyst of the ovary, entirely devoid of a pedicle, in an unmarried lady, of forty-seven years' duration.* June 29th, 1862, at the invitation of Dr. Wilson Jewell, I attended a post-mortem examination of Miss S. H., aged seventy-nine years. Drs. Mayburry and Drysdale were also present, the last-named gentleman conducting the examination. She was a large, fat woman, especially in the abdominal region. On cutting through the very thick, fatty walls of the abdomen, and penetrating the cavity below the umbilicus, the knife immediately opened a cyst, which gave exit to a considerable quantity of fluid, which looked purulent and feculent. At this point the wall of the cyst and that of the abdomen were most intimately adherent. The adhesions were separated, and the walls of the abdomen were divided into four flaps, and the cavity well exposed. A tumor, imbedded in the folds of the large intestine, about ten inches in diameter, was now brought to view. It occupied mainly the umbilical region. The ascending colon was in contact with its right border, the transverse colon with its upper portion, the descending colon embraced its left side, and the sigmoid flexure, which was displaced, traversed the front of the tumor from the left inguinal region obliquely upward to the right of the umbilicus, and then turned down into the pelvis through the right inguinal region. The whole of this bowel was greatly enlarged, and distended with liquid fæces and flatus. None of the small intestines were visible. The tumor was adherent to all its surroundings,—the abdominal wall, the mesocolon, omentum, and intestines.

It was carefully enucleated or shelled out from its bed in order to arrive at the point of origin, but it had no connection with any part of the body excepting through these morbid adhesions. *There was no pedicle.* The tumor seemed to be entirely independent of any association with the pelvis and its organs, and its lower border was at least three or four inches distant from the uterus and cavity of the pelvis. The cyst itself had all the characters of an ovarian cyst, yet it evidently had not the ordinary attachments belonging to the ovary.

On cutting open the cyst, a pretty solid mass was found within it, and apparently lying loose. This mass was as large as the fist, flat on one side, and convex on the other, similar in shape to the cake called a rusk or bun. It was about four or five inches in its largest diameter, and two or three in its smallest. It consisted wholly of a thick bunch of reddish hair, very compact, and covered and infiltrated with sebaceous or fatty matter.

The intestines, omentum, and mesentery were loaded with fat, and the peritoneum everywhere showed signs of old inflammation, being thickened and opaque. The only evidence of recent inflammation was in the cyst itself.

The pelvis was now carefully examined. The uterus was atrophied, but healthy. The right ovary was found, and it was also atrophied, with a small cyst attached. *The left ovary was absent. No connection could be traced between the left side of the uterus or its ligaments and the cyst in the abdomen.* The hymen was intact.

In regard to the history of this very interesting and rare case, I learned that the tumor was known to exist as far back as 1815, when she was a patient of my uncle, the late Dr. Edwin A. Atlee. Dr. Joseph Warrington, who also attended her years ago, and who is still living, furnished me the following note of her case, dated July 5th, 1862: "As I mentioned in town the other day, I find I cannot recall any minute detail of the case of S. H. The late Dr E. A. Atlee attended her several years for what he called a 'tumor in the abdomen.' From him she descended as a patient to the late Dr. Joseph Parrish, and was under his care with an 'indefinable tumor somewhere in the abdominal cavity;' and as such a case she was handed over to me, perhaps about 1840, with a large abdomen, and abundant adipose tissue in other parts of her body. I never was able to satisfy myself, by any superficial exploration I was allowed to make, respecting the character or exact locality of the 'tumor.' Ten years have elapsed since I had any particular care of her."

The above case is remarkable inasmuch as the tumor had no direct connection with any of the pelvic contents. It was undoubtedly a dermoid cyst, and must originally have had the usual pedunculated attachments to the uterus which belong to ovarian tumors. How did the separation between it and the uterus occur? I can only explain this through the agency of a twist in the pedicle, obliterating the vascular connection between the tumor and the uterus. (See Case LIV.) This would have resulted in the death of the tumor, had not inflammation coexisted or immediately followed. At an early period of the history of the tumor, this patient, as the autopsy shows, must have had a severe attack of peritonitis, which resulted in sealing the surface of the tumor to the surrounding parts. The adhesions thus formed were sufficiently organized to sustain the vitality of the tumor, without being able to further contribute to its development. Hence it remained in a quiescent condition between thirty and forty years, as it was supposed not to have increased in size after the climacteric period.

This case was frequently presented as a strong argument against ovariotomy, when it was the fashion, in the probationary stage of this operation, to condemn it. Here was a patient in full health, carrying an ovarian tumor year after year without inconvenience, and arriving at an advanced age, a living argument against officious and criminal interference! And yet in this very case, in confirmation of the propriety of the operation, Nature herself had separated the ovary from its connection, and thus, by arresting its development, had prolonged the life of the patient!

f. CASE LIV.—*Dermoid cyst of the ovary in a married colored woman, with a long atrophied pedicle.* October 28th, 1870, I was requested by a lady friend to visit Mrs. M. W., a colored servant. The patient did not know her own age, but supposed that she was about sixty. She had five children, the youngest being twenty-three years of age. After the birth of the last child, she had no return of the menses, but had always been regular before. The abdomen was pretty well supplied with fat, protuberant, and rather pendulous.

She did not know when the tumor first made its appearance, but it had troubled her for several years. When the patient was placed upon her back, the abdomen was seen to be perfectly symmetrical in shape. By the hand, however, I could detect a hard, smooth, oblong (almost round) tumor in the right side, occupying the right inguinal, right lumbar, and right side of the umbilical regions, extending just beyond the linea alba towards the left. It was capable of being moved freely in all directions.

The uterus was central, much heavier than usual, and was occupied by an intra-mural fibroid tumor in the fundus. The sound entered two and a half inches. The abdominal tumor could be moved in every direction without disturbing the uterus.

Diagnosis.—Uterine fibroid tumors,—one intra-mural, the other pedunculated.

I did not visit the patient afterward.

December 20th, 1870, at the invitation of Dr. William G. Porter I attended the autopsy of Mrs. W., who had died the day before of uræmic convulsions. On opening the abdomen, about one quart of ascitic fluid escaped, and an oval, smooth tumor was seen occupying the right side of the cavity. It was extensively attached to the omentum, in two places to the bowel, and also to the wall of the abdomen. A singular cord-like substance extended from the tumor into the pelvis. On examination, this proved to be a very long, slender pedicle, twisted like a rope on itself, not thicker than a crow-quill, and six or seven inches in length, dipping into the left side of the pelvis, and continued into the broad ligament. It was evidently atrophied. The tumor seemed to have begun to degenerate and soften, and in two places, where it was accidentally nicked by the knife, gave exit to purulent-looking matter. The right ovary was in place, but atrophied. The left Fallopian tube and its fimbria were also atrophied, and the left ovary could not be found in the pelvis. The abdomen and lower extremities were œdematous, pitting on pressure.

The tumor, uterus, and appendages were removed by Dr. Porter, without disturbing their relative positions, for further examination.

Dr. Porter reported that "the tumor contained a thick, yellowish creamy fluid, and a mass of hair glued together by thick sebaceous-like matter. On making a section of this mass, no trace of bones or teeth was found. *The uterus:* the cervix was elongated, and the sound passed readily to the fundus, a distance of four inches. At the fundus an exceedingly hard, almost round tumor, about one and a half inches in diameter, was found. On sawing through it, it was found to consist of a dense, hard, fibrous-like tissue, completely surrounded by a thick layer of calcareous matter. On the posterior wall a similar but smaller tumor was found. On the anterior wall there was another, much smaller. Of this no section was made. The right ovary was healthy, as were also its appendages." Dr. Porter also stated that the hair was black, straighter than ordinary negro hair, yet possessing its curl and crispness to a certain degree. It may also be stated that the patient was a full-blooded negro.

In reading over the report of the above case, it must have been noticed that the diagnosis was fibroid tumor of the uterus, while the autopsy proved it to be a tumor of the left ovary. It is so exceedingly rare to find an African woman with an ovarian tumor, and so very common to meet with uterine fibroid tumors in the same race, that the diagnosis was made without hesitation and perhaps too hastily, although all the physical signs seemed to confirm it, and particularly as other uterine fibroid tumors were present and correctly diagnosticated. I may here state as a remarkable fact, that out of two hundred and fifty-five operations performed by me for the removal of the ovary, only one was performed on the negro, and that a mulatto, notwithstanding I have been frequently consulted by that class for abdominal and pelvic tumors. So satisfied am I of the predominance of fibroid tumors in the negro, that when consulted I never anticipate finding an ovarian tumor.

Another interesting fact, referred to when discussing the subject of general diagnosis, was the position of the tumor on the *right* side, although it was the *left* ovary.

A noteworthy feature of the above case, also, was the peculiar and atrophied condition of the pedicle. It was so twisted and attenuated that I doubt whether the circulation of the blood through it was maintained. I believe the only supply to the tumor came through the vessels contained in the adhesions, and the mass was nourished in the same way as that of Case LIII. I have no doubt, also, as in that case, that had sufficient time elapsed after the occurrence of the twist, the useless pedicle would have been absorbed, and the tumor become isolated in the cavity of the abdomen.

B. **Extra-uterine fœtation.**—Extra-uterine fœtation may properly be classed under the same head as dermoid cysts of the ovary, as in some cases, at least those cases which resemble ovarian tumor, they involve the same organ. It is well known that there are two forms of misplaced gestation: the *tubal* and the *ovarian*, or *ovaro-tubal* pregnancies. The tubal is much more common than the ovarian, and usually results in rupture and death before the termination of the third month, while the ovarian or ovaro-tubal may continue several months, and, after the death of the fœtus, may remain, as do the dermoid cysts, for an indefinite length of time. It is the latter form of extra-uterine fœtation, therefore, which more particularly involves the subject of differential diagnosis, and which may, although very rarely, interest the ovariotomist. With regard to the more frequent and more fatal form of tubal pregnancy, which deeply interests every surgeon, the profession is greatly indebted to Stephen Rogers, M.D., of New York, for a most valuable paper on "Extra-uterine Fœtation and Gestation," and for boldly promulgating views that must result, if carried out, in saving many valuable lives. This paper was published in the Transactions of the American Medical Association for 1867, and also in a separate form.

The tumor constituting a tubo-ovarian pregnancy, like the dermoid cyst, is prone to form adhesions to surrounding viscera, and to discharge its contents into the intestines, the bladder, the vagina, or through the abdominal wall, rather than, like the tubal variety, into the cavity of the abdomen.

CASE LV.—*Extra-uterine fœtation; first supposed to be a fibroid tumor; removed by gastrotomy.* February 23d, 1867, I visited Mrs. A. W. in consultation with Dr. A. G. B. Hinkle, of this city. Dr. H. informed me that in the early period of her illness he had supposed her to be pregnant, but that she had now gone far beyond the full period of gestation, that her health had become very much broken down, and that all treatment had failed in relieving her.

On examination, I found a well-defined tumor in the central portion of the abdomen, about the size, shape, and in the position of a uterus at the seventh month of gestation. In consequence of the great emaciation of the patient, the tumor was particularly prominent, and its outlines could be readily seen extending from the pubes to three or four inches above the umbilicus. It was hard, inelastic, rather smooth, oblong, almost immovable, and the abdominal wall pretty tightly drawn over it. The uterus was of the normal unimpregnated size, admitting the sound two and a half inches.

The constitutional symptoms being very grave, the emaciation extreme, the skin sallow, or straw-colored, the pulse small and frequent, and indeed the patient in a profound state of cachexia, I concluded that the disease was malignant, originating probably in an outgrowth from the fundus of the uterus. With that view of the case, I suggested to Dr. Hinkle the use of small doses of arsenic internally, and tincture of iodine externally. I made no appointment to call again.

May 19th, 1867.—I had heard nothing of the case until this date, when I was requested to take charge of the patient, as

Dr. H. had ceased his attendance. I then found that an opening had formed at the umbilicus, and that a most offensive and copious discharge, with fetid gas, was constantly escaping. The emaciation was extreme, the pulse was very feeble, the tongue was red, the mouth was aphthous, there was an entire loss of appetite, and a condition of septicæmia was present which threatened a fatal termination. By sustaining treatment, conjoined with antiseptics, the patient slowly improved, and finally was able to be taken out of bed. At the same time the tumor diminished in size.

By the following August the tumor was reduced in size so that it did not reach beyond the umbilicus. It was now as hard as bone, and the offensive discharge still continued. I had probed the opening several times, but without satisfactory results. As the patient's vital powers seemed to be giving way in spite of treatment, I again repeated the examination, with the hope of determining the real condition of things. The uterus was of the normal size, and movable, the sound entered two and a half inches, and the pelvis was free. By manipulation with the probe through the fistulous opening at the umbilicus, I succeeded in striking against solid bone within the tumor. I now began to suspect that my diagnosis had been erroneous, and that the case was one of extra-uterine fœtation, that the soft parts of a fœtus had been discharging through the fistulous opening, and that its bones constituted the reduced and hard tumor.

In order to test this opinion, I informed myself more particularly with regard to the patient's previous history. She was twenty-eight years old, had been married twice,—the first time at the age of eighteen years, and had one child by that marriage. She married again in 1861, and had another child in 1864. After weaning the child, she again became regular, continuing so until February, 1866. March following, she had a slight menstrual discharge, but no return in April. About the middle of April, however, at the usual period of menstruation, she was seized suddenly with the most excruciating pain in the right side, resembling labor-pain or severe cramps. Dr. Hinkle was sent for, pronounced her pregnant, but could afford very little relief. After this attack, she was unable to lie upon her right side, and during the succeeding June she could not lie down at all, but had to sit up on a chair all the time. The abdomen, as in pregnancy, gradually increased in size. In July she first felt the motion of the child. The motion continued afterward, and grew stronger. In the latter part of September there was a very violent struggle in the abdomen, as if the child was stretching itself out, accompanied with a shudder. After this, all motion ceased. Dr. H. was sent for again at this time, pronounced the child dead, and thought nature would get rid of it. In the middle of October following she had a regular menstrual discharge, and again in November, lasting one week, and normal in quantity. After that the menses did not return.

In April, 1867, a protrusion occurred at the umbilicus, and in the latter part of the month an opening formed, giving exit to most offensive matter. Dr. H. saw her the day before it discharged, but not afterward.

I now felt fully satisfied that the tumor consisted of an extra-uterine fœtus, and I determined to remove it by gastrotomy, as affording the patient the only chance of life. Just at this time I received intelligence of the intended visit, in a few days, of Mr. T. Spencer Wells, of London, to Philadelphia, and I appointed the time for that and other operations during his stay in our city.

September 14th, 1867, in company with Mr. T. Spencer Wells, of London, Drs. Julius Nicolayson, of Christiania, Norway, John L. Atlee, Senior, of Lancaster, Burpee and Drysdale, of Philadelphia, and W. Atlee Hoffman, medical student, I proceeded to operate. Before doing so, however, these gentlemen made an examination of the patient and approved of the course about to be pursued. An incision about three inches long, commencing at the fistulous opening at the umbilicus and extending downward in the linea alba, was made through a very dense structure, which creaked against the knife like fibrous tissue, until the cyst containing the fœtal remains was fairly entered. This exposed to view the cranial bones, which were severally seized with a common polypus forceps and extracted, and in the same way the whole skeleton was removed piece by piece. The sac containing the fœtal mass extended downward into Douglas's space. The head of the skeleton was in the vicinity of the umbilicus, and the feet in the cul-de-sac, but all were compressed into a comparatively small space. A large quantity of soft and shreddy tissue was removed with the bones. The walls of the sac were at least an inch thick, but this mainly depended upon a spongy mass, resembling broken-down placenta, which lined the inside. In this were imbedded the smaller bones of the extremities and ribs, all of which were removed. With my finger I scraped off a large quantity of this spongy material. There was considerable oozing of blood. After several of the gentlemen had explored the cavity with their fingers, I packed it with strips of soft muslin soaked in a solution of the persulphate of iron, which acted both as a hæmostatic and an antiseptic. One wire suture was placed in the lower part of the wound.

The patient recovered rapidly, was able to sit up by the 22d, and all discharge ceased after the 29th of September. At this date, 1872, she is in the enjoyment of perfect health, weighing one hundred and seventy-eight pounds, having gained since the operation one hundred and eight pounds.

In order to make out a correct diagnosis in a case of extra-uterine fœtation, it is very necessary to investigate the history and symptoms closely. In the earliest periods of gestation, either intra- or extra-uterine, the signs of pregnancy are usually the same; but if as the ovum enlarges certain symptoms supervene, such as severe colicky or spasmodic pains in the inguinal region accompanied or followed by a red discharge from the uterus, they strongly indicate the existence of extra-uterine fœtation. These spasms, as a general rule, are more severe and more frequent in tubal than in ovarian pregnancies. If a tumor is noticed developing in the lower part of the abdomen, while the uterus itself remains small and detached, and this tumor, after a certain time, affords all the manifestations of a *quickening* or living fœtus, the evidence of such pregnancy becomes very strong. As this tumor enlarges, and as the motions within it become stronger, while the uterus itself retains its normal size, all doubt must be excluded, and we may be positive that the case is neither an ordinary tumor, nor a tubal pregnancy, which never develops to this extent, but ovarian, or tubo-ovarian fœtation.

Fortunately these cases are extremely rare. As a proof of this I may state that none of the gentlemen present had ever seen a case. My brother, who had been extensively engaged in practice for half a century, and Mr. Wells, the leading ovariotomist of England, acknowledged that this was the first case of the kind they had ever met.

C. **Monstrosity by inclusion.**—It will not be improper, also, to place under the same head those singular cases known by the name of monstrosities by inclusion. Rare as is tubo-ovarian fœtation, this form of tumor is still more rarely met. It consists of an imperfectly-developed fœtus, which has been included, in utero, in the body of a perfectly-developed child. It is a fœtus within a fœtus, the former dying at an early period, while the latter continues to live, is born, and after birth carries within itself the remains of its uterine co-inhabitant. This species of tumor, unlike the dermoid or extra-uterine, is unconnected with the organs of generation.

Case LVI.—*Monstrosity by inclusion, in a female child eight years old; the remains of the fœtus discharged through the abdominal walls.* This case, which occurred in the practice of my brother, Dr. John L. Atlee, of Lancaster, is one of great interest. In the summer of 1846 he was consulted in the case of a female child from York, Pa., eight years old, who had been suffering from a tumor of the abdomen, which had formed an abscess and opened externally. This was followed by the gradual protrusion of a large mass, which he seized with his hand, and upon giving it a slight twist, it came away. The mass consisted of a large bunch of hair and an amorphous collection of mingled hard and soft tissue. The tumor was sent to me in Philadelphia, and a careful dissection made of it by William R. Grant, M.D., Professor of Anatomy.

Figure 12 represents a front view of the monstrosity; figure 13, a back view; figure 14, a front view of its skeleton; and figure 15, a back view. Professor Grant described the specimen as follows:

Fig. 12.

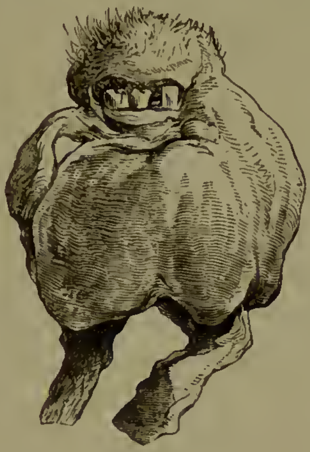
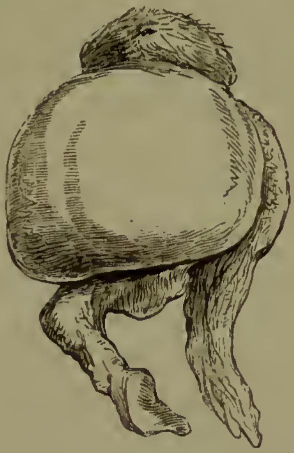


Fig. 13.



"The tumor, at first sight, appears to be an amorphous mass,—its consistence firm, the integument considerably corrugated, probably by the alcohol in which it was kept before dissection. The upper and back portion, resembling in structure the scalp, is covered at present with a few scat-

Fig. 14.

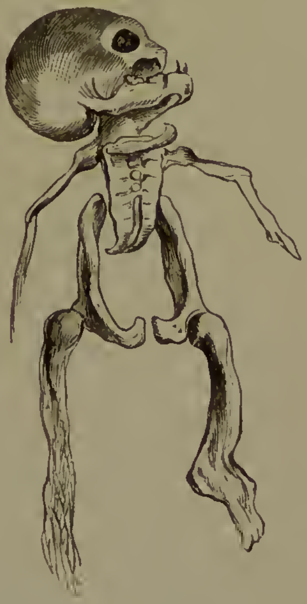
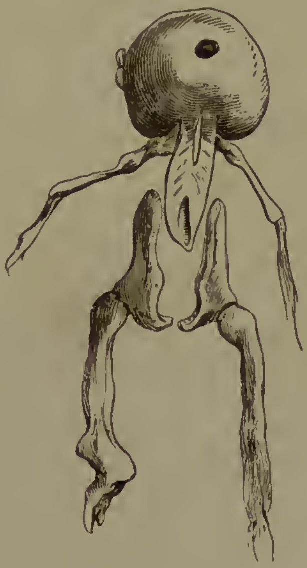


Fig. 15.



tered straight hairs. Its size is three and a half inches in length, and two inches at the widest part; weight, two ounces. Anterior to the scalp is an irregular horizontal fissure, supposed to be the rudiments of a mouth. Below this are three perfect temporary teeth, loosely attached to the soft parts or gums of the lower jaw. The exposed and prominent teeth are lateral incisor, bicuspid, and molar, superficially resting in alveoli of an imperfect jaw, within the body of which are imbedded one or two rudiments of other teeth, seen through an opening at the base. The maxilla has a ridge corresponding with the symphysis; it is movable on the left, but anchylosed on the right side.

"Within the mass I have traced, with some difficulty, a skeleton, tolerably perfect, though considerably distorted. The cranium, which is large and hard, is united to a short but thick spine,—the latter inflexible, curved backward. and imperfect behind, constituting the malformation known by the term *spina bifida*,—with ridges corresponding with the situation of intravertebral cartilages. At the open part of the spinal canal the cord is distinctly seen giving off filaments; one of these, which I take to be the sciatic nerve, was traced downward to the extremity of the foot. The bones of the head appear as if fused together; no traces of sutures. There are in it two openings, one in front near the centre, and the other corresponding with the situation of the posterior fontanelle. Each of these openings is about two lines in diameter; a small probe can be passed from one to the other, and from either downward through the vertebral canal. The bones of the pelvis are well marked, though misshapen, joined at the pubes by a regular symphysis, covered with cartilage; in like manner to the spine. The acetabula are occupied by the cartilaginous heads of the femurs, round and prominent, with tolerably perfect capsules. The left knee- and ankle-joints are close together, and the foot turned inward (varus). The right side of the pelvis and right hip-joint correspond with the left; but a few lines below the whole extremity appears fibrinous, as if it had been exposed to the action of an acid, and had become partially dissolved. The rudiments of upper extremities were also dissected from the mass, though not so perfectly as the lower, from their smaller size and less prominent position. I could discover no vestige of ribs; nor the appearance of any distinct organs or viscera. Covering the bones is a distinct periosteum."

After this anatomical description of the specimen, the propriety of arranging the above case in the same class as dermoid cysts of the ovary I think will be admitted. As it partakes of many of the characteristics of these tumors, I thought best to associate it with them in the consideration of differential diagnosis. As the patient recovered, it is true that we cannot be certain that the tumor had or had not any connection with the ovary. But, when we take into consideration the age of the patient, and the approximate perfection of the skeleton, I am strongly inclined to believe that it was entirely independent. It is, however, probable that, had the mass remained quiescent until the patient had arrived to mature years, important changes would have occurred, in the course of time, so as to have reduced the structure to a very different condition, and caused it to assume more nearly the ordinary signs of a dermoid tumor. Still, I believe that the case belongs more properly to that theory of generation to which M. Roux applies the term "*Emboitement*," or "*Abdominal Enadelphia or Monstrosity by Inclusion*," and which affirms that the germs are incased in each other in the ovary of the female, in such a way that they are developed in succession after impregnation. In other words, it is the theory of *Incasing of Germs.*

With regard, however, to the dermoid cysts, there can be no question of their ovarian origin, as this has been decided by examination after death. If the dermoid cysts, therefore, belong to the ovary, it may properly be asked, why distinguish these from other ovarian tumors? As this discussion of diagnosis is intimately related to the question of extirpation of the ovary, the propriety of this course becomes apparent. At a very early period, no doubt these dermoid and osteo-piliferous tumors might occasionally be removed by the surgeon with the same immunity as other ovarian tumors; but, unlike the latter, as they progress, they are peculiarly prone to form intimate adhesions with the abdominal and pelvic viscera, and thus increase too greatly the hazards of an operation. The history of the cases above detailed shows how often they are the subject of spontaneous inflammation, resulting in adhesions to the adjoining structures, in perforation of the hollow viscera, and in death. Hence the importance of making this distinction.

CHAPTER V.

PREGNANCY.

The question of the differential diagnosis between ovarian tumor and pregnancy is one of great interest and importance, in several points of view. To the careful and practiced observer it would appear to be one easy of solution, and to be quite impossible to mistake one condition for the other. A reference, however, to the clinical facts, hereafter to be presented, will abundantly satisfy the reader of the difficulties sometimes to be encountered. When the physical and rational signs of these respective conditions are clearly marked, a careless observer even will readily note the distinguishing features, and make out his case. But when some of these signs are wanting, and others are not well defined, or are masked, and others again are contraindicative of the supposed condition, it may be exceedingly difficult to arrive at a positive decision. And yet how important often to the character of a virtuous unmarried lady, and to the peace of the domestic hearth, is such a question! The grounds of suspicion become daily more and more manifest, and give color to the idle whispers of the friends and neighbors of an unfortunate patient, while the medical adviser himself may mistakingly aid in prejudicing her pure character. Hence the moral and social view of this question is one of very grave importance, and, apart from scientific considerations, demands the most serious inquiry into its differential diagnosis.

Before engaging in the discussion of this interesting point of diagnosis, it may be well to collate the principal signs of pregnancy.

Certain constitutional symptoms are induced by conception, with which we are all familiar: increased nervous irritability and vascular activity, variable and capricious appetite, irritable and sick stomach, suppression of the menses, increased size and sensibility of the breasts, a more decided areola with enlarged follicles, and the accumulation of milk. The uterus, as it enlarges by the gradual growth of its contents, ascends into the cavity of the abdomen, assumes the shape and size of a tumor, alters the contour of, and increases the size of, the abdomen, and thus, by changing the centre of gravity, gives a peculiar gait and attitude to the pregnant woman.

These are all recognized as the ordinary signs of pregnancy, and yet if we attempt to decide the question of pregnancy on such evidence we shall frequently be led into error, as we may find these signs all associated with an ovarian tumor, wholly independent of conception. We therefore must not arrive at a conclusion on such data. Our own reputation and the fair fame of our patient are at stake, and depend upon the correctness of our expressed opinion. We should insist on further investigation.

An examination per vaginam must next be made. In pregnancy, the os and cervix uteri, according to the period of gestation, are altered in size, in shape, in texture, and often in the appearance of the mucous membrane covering them and the walls of the vagina. In the earlier months of pregnancy the os and cervix are very little changed in size, shape, and consistence. As the period advances, however, towards the sixth month and afterward, we find the cervix shortening as it dips into the vagina, and expanding at the top of it, and by the time gestation is completed the whole cervix is obliterated and changed into a globular tumor, while the os is felt as a thin, soft, and relaxed ring. In nearly the same rate of progress there will be a change in the texture of the parts. The vagina and vaginal portion of the uterus will feel softer and more relaxed, and even from an early period of pregnancy the speculum will reveal a peculiar dusky hue of the same parts. In the married female we would, of course, expect the hymen to have disappeared and the vagina to be capacious under any circumstances, but when such a condition prevails in one unmarried, associated with the above state of the os and cervix uteri, there is strong *prima facie* evidence of pregnancy. Still, we are not warranted in pronouncing positively that our patient is pregnant, for there may be conditions,—particularly connected with uterine fibroid tumors,—even in the virgin female, subjected to previous vaginal examinations, which may resemble all these strong indications of pregnancy.

There are still stronger evidences, upon which we must rely, before giving an opinion. Perhaps the case has not progressed far enough to develop these more certain signs. If so, it is best to wait. After awhile the abdominal tumor increases, the fœtus gains in size, strength, and activity; the observer's hand, placed on the abdomen externally, or his finger in the vagina, may detect its movements; the ear, with or without the stethoscope, applied over the proper points, may discover the pulsations of its heart or the placental sounds. If, in addition, we should get undoubted responses to ballottement or repercussion, we can be no more in doubt as to the existence of pregnancy.

When, therefore, we meet with a case in which the above signs are clearly associated, we must pronounce the patient pregnant, as there is no morbid or other possible condition that resembles such a combination of symptoms. As thus recorded, the case seems plain. Yet every practitioner knows, through daily experience, that the diagnosis, however clear on paper, is not so readily made out in practice, that this concourse of signs is by no means uniform, and that there are numerous cases of unusual obscurity, which may deceive the careless or inexperienced physician, and often severely test the most consummate skill of one of superior discernment.

It is not uncommon, also, for the married female, during the progress of an ovarian tumor, to believe that she is pregnant, and to imagine that she feels the motions of a child. It is even sometimes the case that the medical attendant himself will coincide with her in this opinion, and be deceived by spasmodic contractions of the abdominal muscles into the belief that he feels fœtal movements. He may also sometimes observe, by auscultation, a pulsation in an ovarian tumor, which, in a nervous female with a rapid pulse, might be mistaken for the action of the fœtal heart; this pulsation being the impulse of the aorta against the superimposed ovarian cyst, and conveyed by the vibration of the fluid from the posterior to the anterior wall. Sometimes, too, ballottement is impossible in pregnancy in consequence of the deficiency or absence of the liquor amnii. The difficulties of diagnosis in these cases must, therefore, be manifest, and will be best illustrated by clinical observations.

A. **Pregnancy mistaken for abdominal tumor.**—I shall first call attention to cases in which pregnancy existed, but was not suspected, and which was treated for abdominal tumor.

a. CASE LVII.—*Pregnancy mistaken for a tumor in the abdomen; the patient sent to Philadelphia by her physician for an operation.* January 28th, 1857, Mrs. W. D., of Baltimore, arrived in Philadelphia with a letter from an old and very respectable physician of that city in extensive practice. The letter was as follows:

"DEAR SIR,—By my persuasion, Mrs. W. D., of Baltimore, my patient and friend, visits Philadelphia to take your advice and direction for a *tumor* in the abdomen. I have assured her you will examine her with care, and be candid in your expression of the measures necessary to afford her relief from her disease. If you hold an *operation* necessary, I shall be pleased to hear *directly* from you, and will visit Philadelphia, and be present with you. The history of the case you will best obtain from her; but in passing I may call your attention to the *frequent symptoms of vomiting*, which have marked her case for some months."

The following was her history: She had five children, the youngest being three years old. After the birth of the last child, she did not menstruate regularly, although the menses were not suspended. The last menstruation occurred in the first week in May, 1856. After that she was annoyed with dyspeptic symptoms, particularly vomiting and gastric distress. Besides rejecting her meals, for ten days before I saw her she had been vomiting a dark-colored fluid, resembling coffee-grounds. She consulted her family physician, who, upon examining her, concluded that there was an abdominal tumor, and advised her to visit me. It was the first intimation she had had of such a thing, and neither she nor her physician had the least suspicion of the existence of pregnancy.

I placed her in a recumbent position on her back, and examined her abdomen with great care. The abdominal enlargement was about equal to a seventh or eighth month gestation. The tumefaction, however, was not uniform, as in pregnancy, but was quite irregular and uneven. A pretty large, rather solid projection occupied the left hypochondriac region, and more angular portions could be detected in the right side. Upon palpation, and compression with the open hand, I could distinctly feel a motion, which could not be mistaken. Upon applying the ear to the abdomen, I distinctly recognized the pulsations of a fœtal heart, and the placental murmur. On extending the examination to the vagina, the cervix uteri was found to be expanded over the child's head, which occupied the superior strait of the pelvis. With the speculum, the os tincæ and vagina were seen to have the dusky, purplish hue belonging to pregnancy.

I also examined the patient in an upright position, but ballottement was not evident. This was simply impossible in consequence of the absence of the liquor amnii, upon the presence of which this sign depends. The breasts were plump, the areolæ were dark, the follicles enlarged, and milk could be squeezed from the nipple.

The diagnosis of pregnancy was made without hesitation. I sent the patient home with the following letter:

"MY DEAR DOCTOR,—I examined your patient to-day very thoroughly, and have come to the conclusion that she is *pregnant*. I must confess, however, that there is a singular condition of the abdomen present: an irregular, hard, tumor-like body, instead of the uniform, oval form of the pregnant uterus. This peculiarity, I am disposed to think, depends upon a deficiency of liquor amnii, which allows the womb to adapt itself to the irregularities of the fœtal form, and thus to assume the appearance of a tumor. I hope you will watch the case carefully and let me know the results."

After returning to Baltimore, her physician wrote the following letter of explanation: "I have seen Mrs. D. since her return; she is in fine spirits, and blames herself, in part, for not yielding to my expressions of opinion before she left Baltimore, that, in all probability, she was *pregnant*. I had examined her by ballottement, and connecting her symptoms of vomiting with the history of her case, concluded upon its probability. She would not, however, agree with me. You are aware of my unfortunate difficulty of hearing, and by this I was necessarily shut out from the advantages which auscultation would have afforded me, to the establishment of the certainty of my diagnosis. The singular form of the uterus, its position, and the obstinate vomiting with pain, determined me to take another's opinion upon her case before instituting treatment further than palliative for the vomiting. To this purpose, having confidence in your judgment, I directed her to you, being assured I should obtain her true condition. I shall watch her carefully, and as she is expecting confinement in a couple of weeks, I shall especially observe to what cause the peculiar and strange form of the uterus is owing, and inform you."

Over three years having elapsed without having heard the results of this interesting case, I again wrote to the patient's physician for information. He replied: "After her return home, I visited her occasionally to the period of her confinement, and getting up. There was no abnormal condition except some *obliquity* of the position of the uterus to the left side, which in the commencement of labor prevented my reaching the os; but as the process progressed, with some manipulation the uterus gradually became properly positioned, and she was safely delivered of a fine son. This took place on the 7th of March, 1857. There was a deficiency in the liquor amnii, which was noted at the time. There was no difficulty in the parturition; the uterus contracted properly, and assumed a globular form; and she recovered without any untoward event."

The peculiarity of the foregoing case, and which led to the error in diagnosis, was the absence of the liquor amnii. The uterine walls, in consequence, adapted themselves to all the inequalities of the contained fœtus in the same manner as would a thin gum-elastic bag to an uneven body within it. The exact position of the child in utero could readily be traced out. The vertex could be detected in the left side of the superior strait, the nates in the left hypochondrium of the mother, the feet to the right of the nates, and the knees between the umbilicus and pubes,—the back of the child being toward the left side of the mother, and its right side presenting front. Ballottement or repercussion, one of the best signs of pregnancy, was wholly absent. These peculiarities might easily lead a physician afflicted with deafness into an error, particularly if, during his examination, the fœtus did not move in utero.

b. CASE LVIII.—*Pregnancy mistaken for an abdominal tumor; the diagnosis of a tumor being persisted in until the time of parturition.* August 22d, 1857, Mrs. L. R., aged seventeen years, was brought to my office by her mother on the supposition that she had an abdominal tumor. She had been examined by four physicians, two of them of large practice, of acknowledged celebrity, and, withal, authors in medicine, and all had agreed in deciding it to be a case of abdominal tumor. She had been married only two weeks before.

I examined her in the presence of her mother. The abdomen was enlarged to the size of a woman six or seven months pregnant. The enlargement was uniform and the abdomen elastic. The central portion of the abdomen was dull on percussion, the epigastrium and sides were resonant. On making sudden and deep pressure with the ends of the fingers, particularly over the right side, I could distinctly feel a solid body beneath the fluid thus displaced. Placing my ear upon the abdomen, I heard a murmur, which I considered *placental*, although I could not clearly distinguish the fœtal pulsations. I could also detect certain movements, which I thought were *fœtal*. The breasts were enlarged and contained milk, which could readily be pressed out. The areolæ were enlarged and darkened, and their follicles increased in size. The examination per vaginam discovered the hymen to be absent, the vagina capacious, the cervix shortened, softened, and expanded. The speculum disclosed the mucous surfaces to be congested and of a mahogany color. No ballottement could be detected. She had last menstruated in January.

I announced my opinion to the mother, in the presence of the daughter, that there was no tumor, but that she was six or seven months advanced in pregnancy. This the daughter indignantly and positively denied, asserting such a thing impossible. On reasserting that I could arrive at no other conclusion, the mother was greatly distressed at the deception practiced by the daughter, although she consoled herself with the hope that I might be mistaken.

Monday following, August 24th, the mother again called upon two of the distinguished medical gentlemen, stating my opinion to each respectively. They reiterated their former opinion. One called at the patient's house on Sunday following, the 30th, saw and examined her again, and fully satisfied himself that she was not pregnant. In view of this disparity of opinion, I made the following remark in my case-book: *time will prove who is right.*

Subsequently both gentlemen repeatedly examined the patient, and always arrived at the same conclusion, and expressed their indignation that such defamation of character should be attached to her. One of the gentlemen—the physician to the family—even took the trouble of loaning books to the family, and of reading passages to the mother in his office, to show how I was mistaken in the case, and to prove that it was one of tumor.

It was a Jewish family, and one of extensive connections, and the case produced considerable excitement among them. I was repeatedly called upon by various branches of the family until I was tired of repeating my opinion, and declined further interviews. The mother, finally becoming fully satisfied of the correctness of my view of the case, took her son-in-law to account, and he acknowledged having had intercourse with her daughter in the month of January last. Still, this proof did not change the opinion of these gentlemen.

In October I was again called upon by the mother for the purpose of engaging my services in the approaching accouchement. I at first declined, but she insisted, stating that her family physician had so pertinaciously adhered to his opinion that she considered it unsafe to trust her daughter and her child to his care.

November 14th, the family physician called to see the patient, and, patting her on the cheek, again assured her that she would not have a child.

Next day, November 15th, the husband summoned me to visit his wife in labor, which commenced at nine A.M., and gradually and regularly progressing, terminated at nine o'clock P.M. in the delivery of a very large, robust, living male child, no tumor remaining! *Time, therefore, had decided the question.*

The above case is presented because it occurred in the practice of eminent medical gentlemen, men of advanced age, large experience, and close observation, and not on account of any great obscurity in the case. It is true that, at the only time I examined the patient, ballottement and the fœtal pulsations were not discovered, yet every other sign was characteristically marked, and it is altogether probable that the other signs were evinced by further development of the fœtus. I can only explain the error in diagnosis, in this case, to a too careless examination in the first instance, and the receiving of a mental impression so strong that no subsequent examination could afterward remove it.

c. CASE LIX.—*Pregnancy mistaken for abdominal tumor; and denied by the patient even after the child's head was born.* October 26th, 1859, Mrs. A. C. M. called, in company with her mother, to consult me respecting a "movable tumor in the abdomen." In several points of view this case resembles the foregoing. Several aged, experienced, and excellent physicians, who had examined her, diagnosticated an abdominal tumor, and, satisfactorily to themselves and to the patient, explained certain movements to be dependent upon flatulency and altered nervous sensations.

I examined her first in a sitting posture. Her size corresponded with a woman in the last month of pregnancy. There was dullness on percussion over the region enlarged, but no fluctuation. Next I placed her on her back. This position scarcely altered the shape of the abdomen. It was elastic, and percussion returned the same evidence. The points of the fingers, on being suddenly pressed into the abdominal wall, struck against a deep-seated solid body. On placing my hand upon the abdomen, I soon discovered a movement which I could not mistake. It seemed quite strong on the right side, and apparently depended upon the quick motions of a child's limbs. I next placed my ear against the abdomen, over the left side, below the umbilicus, and clearly discovered the pulsations of the fœtal heart. On examining per vaginam, the cervix uteri was found to be expanded over a child's head, the os tincæ was thick and not open. Without continuing the examination, I was fully satisfied that she was pregnant and near full time.

She had not menstruated after the latter part of the month of January preceding, and was married only about fourteen weeks before I saw her. On announcing my opinion, both mother and daughter were indignant, and said such a thing was impossible.

Next day the husband called upon me to know whether motion in the child could commence so soon after marriage. I told him such an occurrence was quite possible, although it was exceedingly rare so soon after conception, dating that at the period of marriage.

November 10th, full two weeks afterwards, I was called to see the patient about eight o'clock A.M., for a "severe attack of cramp of the stomach," which she had been suffering from for about five hours. Suspecting the character of the "cramp," I made an examination per vaginam, found the os tincæ attenuated, open to the extent of an inch, and the pains decidedly uterine. I reannounced my former opinion, and further informed her that she would be a mother before night. But she "knew better, as that could not be the case." She wanted to know if retained menses and clotted blood could not produce such swelling. "No,—have a little patience, and the mystery will be solved before night." After four o'clock P.M. a full-grown, lusty boy was born. Even after the head was extruded, she persisted in denying her pregnancy, and did not acknowledge it until she heard and saw her child.

d. CASE LX.—*Pregnancy mistaken for an ovarian tumor; the patient tapped, causing a miscarriage of twins.* Having mislaid the notes of this case, I shall have to depend upon memory for the principal points in it. Several years ago I was called in consultation, first by one physician and again by another, to see a woman with a rather irregular abdominal enlargement. Upon examination I was perfectly satisfied that it implicated the uterus. As the menstrual flow had been interrupted, I did not resort to the use of the sound, fearing the existence of pregnancy, and as the period had not sufficiently advanced to discover either fœtal motion or pulsation, I was not prepared to pronounce on its presence. The irregular form of the abdomen, however, indicated the probable presence of a tumor, and both of the physicians had so regarded it, particularly as the patient was unmarried. As there was also present a slight sense of fluctuation, the last physician with whom I had consulted had determined to tap her, but upon my remonstrance he agreed to omit it. I did not visit the patient again. She, however, increased more and more in size, and her physician, considering that the symptoms were becoming urgent, and convinced that she was not pregnant, and that it was an ovarian tumor, undertook to tap her, but succeeded in getting very little fluid. A few days after the patient miscarried with twins, and all the signs of a tumor disappeared.

A specimen of the fluid was sent to Dr. Drysdale for examination soon after the tapping, whose report was as follows:

"May 11th, 1856, a fluid was sent to me by Dr. A. L. for the purpose of assisting his diagnosis in a case of abdominal tumor. He had tapped the patient a few days previously. The fluid is cloudy, of a dirty light straw color, partially decomposed and fetid, alkaline, specific gravity 1010, thin like water, becoming opaque on boiling and on adding acetic acid. The microscope shows only epithelial cells in abundance, fat and blood cells.

"By evaporating five hundred grains to dryness, six grains of solid residuum were obtained. Three grains of this were albumen, as was shown by boiling five hundred grains, adding a few drops of acetic acid, and washing the solid thus obtained."

In the above case, the medical attendant was misled by the unusual irregularity in the form of the pregnant abdomen, in consequence of the scarcity of the liquor amnii; by the patient being unmarried; by her desire of ridding herself of the fruits of an illegitimate congress; and by his impatience in not waiting until time would have cleared up all doubts. He performed paracentesis with the view of emptying an ovarian cyst, and did not discover his mistake until he had the extreme mortification to find by the miscarriage that he had perforated the uterus.

e. CASE LXI.—*Pregnancy mistaken for an ovarian tumor; ovariotomy decided on, but after further counsel abandoned.* May 1st, 1870, a physician of Philadelphia, who had performed ovariotomy, called at my office to request me to see a patient from whom he expected to remove an ovarian tumor in a few days. He told me that as she was living out at service, he had engaged rooms for her and had completed all the arrangements for the operation, but before performing it he would be pleased to have me see her. I saw the patient with him next morning, and made the following memorandum: Miss E. C., aged forty-five years. She had always been regular until July, 1869, in which month she had her last menses. Soon after she noticed that her abdomen began to grow larger, and had gradually increased up to the time I saw her.

The patient was a spare woman, and a good subject for examination. While lying on her back with the abdomen exposed, I noticed a fullness and contour resembling a woman eight months pregnant. The enlargement was central and uniform, and extended some distance above the umbilicus. There was dullness on percussion over the seat of the tumor, and resonance on both sides of it and above it. The tumor was soft, elastic, semi-fluctuating, and yet occupied here and there by solid masses. The solid portions did *not occupy the walls*, but evidently were *within the cavity* of a sac. These solid masses could be pushed away from the cyst wall, and upon removing the pressure they would again return. Upon the right side could be traced a mass as large as the fœtal head, and upon the left, lower down, were a couple of nodules, resembling the knees of a fœtus, all of which, by sudden pressure, could be made to rebound from the cyst wall. The vagina was quite capacious, the hymen entirely absent, the cervix fully expanded, the os tincæ attenuated, and rather spread out and patulous. Through the expanded cervix similar hard bodies were detected, which also rebounded by pressure. Indeed, with the hand above, and the finger in the vagina, I could distinctly play a solid body between the two through a fluid. In fact, ballottement was remarkably distinct. The breasts also were supplied with rich milk. The areolæ were darkened, and the follicles and nipples were enlarged.

On retiring for consultation, the doctor was surprised to learn that my diagnosis was pregnancy. He said that he had examined her with the speculum, that he found the os congested, and the parts had a purplish color; and that while the speculum was in place he had introduced the sound the normal distance of two and a half inches, at which point it was arrested, and from that circumstance he supposed that the uterus was of its natural size.

Being positive of the existence of pregnancy, I requested him to postpone his operation until further developments would unfold the mystery to his doubting mind, and then to inform me of the results.

Not hearing from him, and being anxious to learn how the case terminated, I addressed a note to him, and received the following reply:

"August 26th, 1870.

"DR. ATLEE. DEAR SIR,—That woman left for New York a few days after we saw her, and I have not been able to find out anything about her since."

The mistake in the above case ought never to have been made. I cannot account for it unless the physician was misled by her unmarried condition, her advanced years, and the belief that the arrested menstruation was the result of the climacteric change of life. It appeared as if he had not the least suspicion of pregnancy, and yet I have never met an instance in which the characteristics were more decided and unequivocal.

B. **Ovarian tumor mistaken for pregnancy.**—A much more frequent error, however, occurs wherein the mistake is reversed: a tumor may actually exist, but is not suspected, and the case is regarded as one of pregnancy. In a large number of cases of ovarian tumor, occurring during the menstrual period of life, and particularly in the earlier stages of the disease, the married lady herself suspects that she is with child, while the unmarried is accused of such a condition by her censorious friends. Even the physician will be severely tried in arriving at a correct diagnosis, although aided by a a careful examination. This is so common an error that I need illustrate it only by one marked example.

Case LXII.—*An ovarian tumor mistaken for pregnancy; the physician in attendance all night waiting for a child to be born; ovariotomy.* December 12th, 1860, I visited Mrs. J. B. in consultation with Dr. Joseph R. Bryan. She was twenty years of age. Menstruation commenced at the age of twelve, and was so profuse that she fainted from the loss of blood. It continued one week. There was no return for one year, when it reappeared, and was again quite profuse. After this it recurred regularly every four weeks, but always too freely. At the age of fifteen, for a period of two months, the intervals were only two weeks, and the discharge was so profuse as to cause fainting two or three times a day. She became perfectly blanched and anæmic. At the age of sixteen she was married. This made no change in her menstrual habits. About nine months afterward she had a very severe attack of flooding, and her physician, Dr. Z., considered that she was threatened with miscarriage. The hemorrhage lasted one week, and occurred at a regular menstrual period. She continued to be regular afterward for six months, when she had another and more severe attack of flooding, lasting eight days. By this attack she was confined to bed two weeks. Two regular periods followed, and then she had another hemorrhage. After this her health was bad until the spring of 1860, when she was seized with violent cramp in the lower part of the abdomen while in the act of getting into bed. The pain was so intense as to cause syncope, and continued for two hours. The attack occurred in the interval between the menstrual periods. The abdomen had also been enlarging from the previous February. Dr. Z., who had been sent for, assured her that she was five months pregnant, and that she would not get well until she had her babe. At the same time the external genitals were swollen and irritated. Afterward, during the bathing season, she spent two weeks at the seashore, using sea-baths, which resulted in benefit. Two months after her return, however, she was again seized with a similar attack of cramp in the abdomen and back, so severe that she was carried up-stairs to bed and her physician sent for. He sat at her bedside all night waiting for a child to be born. None came. After this attack, the pudendum became more tumefied than before, and greatly inflamed and sore. These acute symptoms all gradually subsided without the occurrence of parturition.

At the time I saw her she constantly suffered from a dragging pain and weight, particularly on going to bed at night. There was no difficulty in the act of urination or defecation. A recent attack of bilious dysentery was the only additional sickness from which she suffered. Menstruation was regular.

I examined the patient. She was small and delicate. When lying on her back, the exposed abdomen presented the appearance of full pregnancy in size and shape. An oval tumor could be distinctly traced out by palpation, whose longest diameter corresponded with the long axis of the body. This tumor was smooth, free from ridges and nodules, elastic, and indistinctly fluctuating. It could be partially moved from side to side, and upward and downward. It was dull on percussion everywhere over its surface. There was resonance in the epigastrium, and also over the right side when the patient was lying on the left. The breasts were plump, and *milk could be pressed from them.* The areolæ and their follicles were enlarged. Every indication so far rather favored the supposition of the existence of pregnancy. She believed, also, that she had felt the motions of a child; and when the hand was placed upon the abdomen peculiar twitchings of the abdominal muscles were always felt, which were calculated to deceive the physician. No sound, however, could be detected resembling that of the placental souffle, or of the fœtal heart.

On extending the examination to the pelvis, I found conditions which contradicted the external signs. The uterus was small, and was located toward the left sacro-iliac junction. It was antiflexed, both the os and fundus presenting anteriorly, forming an acute angle at the junction of the cervix with the body. The sound entered to the distance of only one inch, at which point it was arrested by the angular flexure. The pelvis was not occupied by the tumor, but the latter could be felt by pressing the finger high up in front of the uterus. Motion given to the tumor in the abdomen was not communicated to the uterus, and vice versa.

The diagnosis was ovarian tumor.

April 18th, 1861, having repeated my examination several times, with a further confirmation of my first opinion, and the enlargement having regularly and rapidly increased, with the development of more distinct fluctuation, I performed the operation of ovariotomy, and removed a unilocular ovarian cyst, filled with a thick, starch-like fluid.

In the case above related, the external characteristics were strongly those of pregnancy, and the patient herself, for a long time, believed that to be her condition. Her physician, quite an aged and intelligent gentleman, an obstetrician of forty to fifty years' experience, was so satisfied of this condition that he waited all night at her bedside for the expected accouchement. He no doubt made a vaginal examination, and the surprise is that he did not then correct his error; but this is perhaps explicable by the fact that the genitals were greatly tumefied, excoriated, and sensitive, and no doubt this condition extended throughout the walls of the vagina, so as to render everything obscure to the touch. At the period of my examination such was not the case. There had, to be sure, been no interruption to the menstrual flow, but this, or at least a red discharge, is sometimes known to occur during pregnancy. Auscultation failed to detect the ordinary sounds; yet even this, as I have instanced, may also occur. Independently of these exceptions, there certainly were very strong reasons for suspecting the existence of pregnancy, particularly in a young married female.

CHAPTER VI.

PREGNANCY COEXISTING WITH OVARIAN DROPSY.

We now approach a question very difficult to decide, and one which is the most trying in differential diagnosis. Enlargements of the ovary, as has just been seen, may resemble pregnancy, and pregnancy, on the other hand, may assume the peculiarities of ovarian tumor; but by careful examination their real characters may be properly interpreted. When, however, they coexist, as they occasionally do, the most experienced observers may be at fault in detecting the real condition of things. It is now so well established that conception may occur during the existence of cystic disease of one ovary, and indeed when both ovaries are involved, that we dare not infer pregnancy to be impossible, or even improbable, in patients having ovarian dropsy. And in all cases of ovarian tumor, during the menstrual age, it is safe to suspect the coexistence of pregnancy, when, after menstruation has been previously regular, the menses become suspended for a season. As the pregnant uterus, in rising into the cavity of the abdomen, will take an anterior or lateral position, provided there exist no adhesions between the walls of the enlarged ovary and the parietes of the abdomen, we may usually detect pregnancy by the ordinary methods, particularly if it be associated with a unilocular ovarian cyst. The uterus, being either in front or on one side of the tumor, can be readily manipulated and auscultated, and the usual signs of pregnancy discovered, while the dropsical cyst adjacent to it can also be readily diagnosticated; and the relative position of the two should always remain the same during all changes in the position of the patient. This would not be the case, however, in ascites, the fluid of which, being free in the cavity of the peritoneum, would gravitate according to the laws of hydraulics, and change its relative situation to the uterus in accordance with the position of the patient. Should the ovarian tumor, which may have existed prior to pregnancy, have contracted strong adhesions to the anterior wall of the abdomen,—which is not an unfrequent occurrence,—then the gravid uterus, as it enlarged, would take a different direction in its ascent, a position back of the tumor, and thus be secluded from examination. In such a case, neither the movements of the fœtus nor the usual uterine sounds would be likely to be detected by the observer. The difficulty of diagnosis is increased if the ovarian tumor be multilocular. Instead of there being two tumors, one elastic and fluctuating, the other more solid and free from fluctuation, there may be several tumors, all varying in consistency and in the freedom of fluctuation; some being hard and containing no fluid, others elastic and more or less filled with fluid, all forming an irregular segregated mass. In such a case the uterus may readily be mistaken as a harder portion of the tumor; yet, when in position to be felt and auscultated, it is capable of being diagnosed at an advanced period of gestation.

There is one condition of a multilocular ovarian tumor, even when pregnancy is absent, that may, to a certain extent, resemble pregnancy when complicated with a single cyst. I allude to that form of multilocular tumor, frequently met with, which fills up one side of the abdomen with one large cyst, while the other side is occupied by a purely multilocular mass, the dividing line being the linea alba. Here a hasty observer, particularly if menstruation had been suspended, might diagnosticate a unilocular cyst on one side and a pregnant uterus on the other.

In the majority of cases of pregnancy combined with tumor, when gestation has advanced sufficiently far, the signs by auscultation, and the motions of the child, will be detected in one side or the other, while the tumor will occupy the opposite side. In some cases, however, as in Case XXXVII., the movements of the child, and the fœtal and uterine sounds, are confined to the central lower portion of the abdomen, while the tumor is above, balanced as it were on the fundus of the uterus. The patient herself is usually cognizant of these movements, and will be able to locate them to the satisfaction of the examiner. Generally the tumor is attached to that side of the uterus upon which it lies.

It is a good rule, in cases of abdominal tumor, always to suspect this complication, when, during menstrual life, the menses have been suspended after a period of regularity, unless by a vaginal examination the uterus is found of such a diminutive size as to preclude such an idea. The same rule will apply to the use of the sound, which under similar circumstances should not be used as a means of diagnosis. The great importance of determining the existence of pregnancy is apparent, and in all cases of doubt it is always best, if possible, to postpone further proceedings until pregnancy is disproved by time, or by subsequent revelations, or terminated by parturition.

The above general observations and practical inferences are based upon the following interesting cases:

a. Case LXIII.—*A large ovarian tumor, tapped sixteen times; after the eleventh tapping the patient was married; after the last tapping ovariotomy was performed, when pregnancy was discovered.* October 5th, 1850, Mrs. R. S., of Connecticut, consulted me on account of an immense enlargement of the abdomen. She was twenty-eight years old, and had been recently married. In the winter of 1843–44, her friends noticed that she was growing larger, but the following spring she decreased in size, and continued smaller during the succeeding summer. Afterward, she again gradually enlarged, and by November she first noticed the swelling herself, in consequence of the pressure in the abdomen. Being unmarried, disparaging reports were circulated about her. The enlargement was general, and extended to the legs, face, etc. She was placed under a great variety of treatment until November, 1845, when she was tapped, and twenty-nine pints of chocolate-colored fluid were drawn off. Up to August 21st, 1850, she had been tapped fifteen times, the whole amount of fluid obtained being about five hundred pounds. The largest quantity removed at one time was fifty-six pounds, the smallest seven pounds.

In the small tapping the fluid resembled calf's-foot jelly. The color of the fluid varied at different times. At the ninth tapping a tumor was discovered in the left inguinal region for the first time. In February, 1850, she was tapped the eleventh time, and by the advice of her physicians she was married to her brother-in-law immediately afterward. Up to the period of her visit to Philadelphia, the tumor in the inguinal region had increased in size after every tapping.

She first menstruated at the age of fifteen. Her menses afterward returned regularly, were free from pain, rather scant, and of two days' duration. From June, 1847, until January, 1849, they were suspended. After that date they were again regular. There should have been a return one week before I saw her, but they failed to appear.

I examined the patient October 6th. When lying on her back, the protuberance of the abdomen was very great. It was so large that it projected downward between the separated thighs. It also bulged at the right hypochondrium, at the left iliac region, and backward on both sides of the spine. The only resonant percussion sound was over the upper portion of the left hypochondrium. Palpation discovered a small tumor in the upper part of the epigastrium, and an indurated spot to the right of the umbilicus. Fluctuation was very distinct over the whole abdomen, except the left lumbar region, which appeared to be occupied by an elastic tumor. The uterus was crowded downward and backward, and toward the left. The os tincæ was closed. The anterior part of the pelvis was filled with an elastic substance. The uterine sound was not used in consequence of the suspended menses following the recent marriage. I feared that impregnation had possibly occurred, and that mischief might result.

The same day, assisted by Professor Grant, I tapped her, removing twenty-eight pints of cider-colored fluid, an accumulation of only six weeks. After the fluid was withdrawn, there still remained a considerable enlargement of the abdomen. The left lumbar region continued to be occupied by the same elastic tumor above referred to, and immediately anterior to that, on a line with the linea semilunaris, was a peculiarly formed tumor, semilunar in shape, convex externally, concave toward the linea alba, and extending upward and downward the whole length of the abdomen. It was so prominent that it could readily be traced by the eye. On making pressure on the tumor in the lumbar region, motion was readily communicated to it. Within its concave face, in the region usually occupied by the small intestines, there was a mass formed by a congeries of very small tumors. This mass occupied the whole umbilical region, was ten or twelve inches in diameter, and circular in shape. Several other smaller and quite movable tumors were detected in different parts of the abdominal cavity. Upon grasping the parietes of the abdomen in the left hypochondrium, and letting them gradually slip away from the fingers, I could distinguish first a cyst, next the muscular wall, and finally the skin. On examining per vaginam, no alteration had occurred in the pelvis in consequence of the tapping. The pelvic tumor when moved communicated an impulse to all the tumors above described, while the uterus remained uninfluenced by these movements.

November 13th, 1850, was appointed for the removal of the tumor. If conception had occurred, she was about two months gone. It was thought best not to defer the operation in consequence of suspected pregnancy, as the patient was then emaciated to the most extreme degree, and had a small pulse of one hundred and ten to the minute.

The tumor, weighing eighty-one pounds, was extirpated, and afterward the uterus was carefully examined. It had a natural, healthy feel, and was evidently impregnated. It was enlarged, about four inches wide, and two inches in the antero-posterior diameter, its fundus being elevated above the crest of the pubes. Its whole aspect was perfectly normal, somewhat vascular, as if supplied with an increased quantity of blood.

The patient recovered from the operation, but the recovery was attended and followed by great gastric irritability, which was supposed to arise from her pregnant condition. The vomiting was inveterate, and no food could be retained in the stomach. At the time of the operation, the emaciation was extreme, her system had no pabulum in reserve to depend on, and as her stomach subsequently rejected everything, she finally, as her physician in Connecticut wrote, "died of inanition." This was one month after the operation. No autopsy was permitted.

In the above case, either before or after the tapping, at that early stage of gestation, it was impossible to ascertain positively the real condition of the uterus, in consequence of the immense masses occupying the cavities of the abdomen and pelvis. The *suspicion* only of pregnancy existed. It was inferred from the associated facts of the absence of menstruation and the recent marriage, not from any perceptible physical signs. I wrote to her physician advising him to induce abortion in order to arrest the vomiting, so that nutrition might be maintained. Had this been done, perhaps the result might have been more favorable.

b. CASE LXIV.—*Dropsy of the left ovary; tapped once before the patient conceived, and twice afterward; the right ovary atrophied; autopsy.* September 30th, 1856, I visited Mrs. P. S. in consultation with Drs. Fricke, Darrach, and Wiltbank. The following history of the case was written by Dr. A. Fricke: "Mrs. P. S., thirty-one years old, called in the early part of January, 1856, at my office, to get my advice for what she thought to be a case of ascites.

"I found her abdomen very considerably enlarged, detected easy fluctuation of fluid in the abdominal cavity; but her general health seemed not much impaired, her complexion looked good and healthy, her pulse was not over eighty-four per minute, there was no œdema; she had walked from her house, Tenth and Master Streets, down to my office, 235 North Sixth; urine normal, digestion unimpaired, no difficulty in breathing except by walking,—all this excluded at once the idea of ascites. I proposed a more thorough examination at her own house, but told her that I suspected she was suffering with ovarian dropsy.

"January 10th, I visited Mrs. S. at her house; she has been healthy from childhood; she menstruated in her fifteenth year, and married in her twenty-fourth year. Menstruation up to that time was very regular; she became pregnant and had an extremely tedious labor; the child was finally delivered by the use of the forceps. After delivery, the patient was very weak, and by some mismanagement her milk, which had been very profuse, was allowed to dry up. Two years after, she was delivered of a second child without much trouble. Some days after delivery, complained of heavy pain in the uterine region; abdomen distended and painful; was treated for these symptoms, but since that time had always, as she expressed herself, a lump on the left side of her stomach. This lump gradually increased. Her milk in this second confinement was again allowed to dry up. The swelling in the left side increased rapidly, and eighteen months after her second confinement she came to consult me.

"By external examination, an encysted abdominal dropsy was readily ascertained. The cyst seemed to be a single one —unilocular; by examination per vaginam, the uterus was found thrown to the right with its fundus by the pressure of the cyst.

"Diagnosis.—Hydrops ovarii simplex. I proposed tapping; it was acceded to.

"January 16th, Drs. William and James Darrach present, emptied the cyst; it contained about two gallons of light-colored, albuminous fluid, semi-transparent, coagulating readily by heat.

"April 12th.—Patient came to my office; thinks herself pregnant; has been always very regular in her menstruation; not menstruated since the first days of March.

"June 6th.—Has no doubt about being pregnant.

"August 8th.—Suffers greatly through the distention of the parietes of the cyst and the pregnant uterus. Concluded to tap her again.

"August 18th.—Tapped her again, Drs. W. and J. Darrach and J. Wiltbank present. Removed about two and a half gallons of albuminous fluid of rather a dark color, shading into brown, like a dark solution of gum-arabic. Specific gravity 1005.

"September 25th.—Pulse one hundred and twenty. Abdomen, through cyst and pregnancy, very much enlarged and extremely tense; os uteri slightly dilating,—pressure of the cyst on the diaphragm causing the most insufferable pain; sleepless; very feeble."

A specimen of the fluid drawn away by the first tapping was sent to Dr. Drysdale for examination, who reported as follows: "An opaque, light-yellow-colored fluid, with a tinge of green. It resembled a thin mucilage of gum-arabic in consistence, and was viscid.

"*Chemical examination.*—Alkaline. Specific gravity 1012. Acetic acid produced no change in its appearance. Boiling, after the addition of acetic acid, produced coagulation, but not sufficient to destroy the fluidity of the liquid. Water, 972; solid residue, 28; albumen, 22.

"The albumen coagulated in a jelly-like form and was washed with difficulty.

"*Microscopic examination.*—Granular cells were present, but few in number."

The above history brings the case down to the period when I saw it in consultation. I shall now record from my own notes. The patient's respiration was very frequent and labored, and her pulse small and accelerated, one hundred and twenty to the minute. The abdomen was greatly distended, but uniform in shape, partaking of all the characteristics of encysted dropsy. Fluctuation was distinct as in a unilocular cyst. The pelvis was found to be occupied by a hard mass, which was recognized to be the head of a fœtus; the os tincæ rested against the sacrum, and was dilated to the size of a silver quarter dollar; the cervix was thinned down; and all were in a condition similar to progressing labor, although no labor-pains were present. The membranes and fœtal head could be easily detected by the touch.

October 1st, I tapped her, removing twenty-six pints of opaque, yellowish-green, pus-like fluid, having a very offensive, putrid odor, uncoagulable by heat. The uterus, enlarged to the size of a seven months' gestation, was readily distinguished after the tapping, and the fœtal movements and pulsations, with the uterine souffle, were perceived. A living female child was born about twenty-four hours after. Dr.

F. was not present at the time of birth, and the child was suffocated in the unruptured membranes.

Dr. Drysdale also examined a specimen of this fluid, and reports :

" A thick, viscid, opaque fluid of a white color with a green tinge. On standing, it separated into two portions, an opaque greenish-white deposit, and a clear, whey-like fluid.

"*Chemical examination.*—Slightly acid, specific gravity 1013. The acid reaction was probably owing to the fluid having been placed in a German wine-bottle.

" *Microscopic examination.*—The fluid was composed of pus and, probably, ovarian fluid, as, in addition to the pus cells, it contained delicate granular cells, some of which showed nuclei when treated with acetic acid."

The patient gradually sank, and died of septicæmia, October 24th. Next day a post-mortem examination was made. The abdomen was very much distended, but the body emaciated to the most extreme degree. The abdominal cavity was filled with a very thin cyst, decomposed, dark colored, and unhealthy in appearance, and adherent anteriorly throughout its whole extent, so as to be almost incorporated with the abdominal wall. The cyst wall was also very vascular. There were no adhesions of the cyst to any of the viscera. It was filled with about four gallons of fluid resembling that removed by the last tapping. Its inner surface was covered by an exudation of fibrin, giving it a pitted and worm-eaten appearance. Back of this was another cyst dipping into the pelvis, containing about one quart of transparent liquid. The walls of the small cyst were healthy and translucent, having no fibrinous exudations on its interior surface. The tumor consisted of the *left* ovary, and had a small membranous pedicle. *The right ovary was very much atrophied.* The uterus had undergone involution to about one-half its size. The remains of the maternal placenta were visible. All the other viscera were normal.

Independently of the question of diagnosis, the above case possesses great interest in a physiological point of view. It is not unfrequent for conception to occur after one of the ovaries has been extirpated. It may also happen during the existence of extensive disease in one ovary, where both were present, as in the case just detailed. But in every instance of this kind, the presumption is that the other ovary must be in a state of health in order that such a result may be accomplished. In the above case, the *left* ovary was very much hypertrophied and diseased prior to conception; and a short time after parturition, the post-mortem condition of *the right ovary* was that of extreme atrophy. It is possible, however, that this might have resulted after the escape of the ovum from the right ovary and its impregnation.

c. CASE LXV.—*An ovarian tumor existing in a case of unsuspected pregnancy; the uterine sound employed three months after conception, and the child born at full period.* June 25th, 1858, I examined Mrs. J. S. in company with Dr. John L. Atlee, of Lancaster, and again next day with Dr. Drysdale. She was twenty-five years old. Menstruation commenced at the age of sixteen years, and after one regular return, the menses were suspended for two years. During this period, her health was bad. The menses returned spontaneously, and continued to be regular up to the period of marriage, being neither profuse, painful, nor clotted, and lasting three days. At the age of twenty-two she was married, after which the menses lasted one week. On the 26th of July, 1857, she was delivered of twins, one of which still survives, and was at the breast until one week before my visit, when the patient was seized with intense pain in the right side, and lactation at once ceased and did not return again. Generally, she enjoyed pretty good health.

She thought that she noticed an enlargement of the abdomen soon after her parturition, but no tumor was discovered until about three weeks before my visit, when she had an attack of severe abdominal pain. Dr. John W. Jones, who was sent for, on examination discovered the presence of a tumor, and referred her to me.

On placing the patient on her back, with the abdomen exposed, there was plainly seen and felt a tumor as large as an infant's head, occupying the lower portion of the right side. It was soft, elastic, fluctuating, and quite movable. It could be pushed about the abdomen in every direction with perfect freedom, and it was free from soreness. The abdominal walls were very much relaxed and attenuated, and consequently the uneven surfaces which existed on the tumor could be readily felt. The os tincæ was directed toward the hollow of the sacrum. It was thickened, soft, and had the velvety feel of granular inflammation. It also seemed fixed and immovable. Anterior to it, occupying the superior strait of the pelvis, was an elastic mass, which could be distinctly felt between the hand above the pubes and the finger in the vagina. It was impacted, immovable, and elastic. The sound entered the uterus two and a half inches.

As her child was only eleven months old, and had ceased nursing only one week before, the idea of pregnancy never occurred to us, and the case was diagnosticated to be one of ovarian tumor, with one cyst situated in the cavity of the abdomen, and another impacted in the pelvis, wedging the uterus against the sacrum.

October 6th, I called to see her again, when she informed me that she thought she was pregnant and could feel the movements of a child. She also informed me at this visit, which she had failed to do before, that she had a menstrual show on the 1st of March, the only one after childbirth. This occurred, of course, while nursing.

I again made a careful examination. The abdomen had increased very much in size. I could recognize the original tumor in the right side. It was larger, possessed the same characteristics as before, and was still movable up and down, but was resisted by another and larger body occupying the left side of the abdomen. This latter body had the shape of and felt like an impregnated uterus. The motions of a fœtus could be plainly felt, and the pulsations of the fœtal heart and the placental murmur were distinctly heard. The tumor, which had been impacted in the pelvis and discovered at the previous examination, had disappeared, and its place was occupied by the os and cervix uteri enlarging into the body of the impregnated uterus. The diagnosis then was ovarian tumor conjoined with a seven months' gestation.

Subsequently Dr. Jones informed me that, about two months after the last examination, he had delivered the patient of a healthy child, there being no difficulty in the parturition.

It is worthy of remark that at the first examination of this patient she must have been at least three months advanced in pregnancy, and yet, with no suspicion of such a condition, the sound was introduced to the distance of two and a half inches in the uterus without injury to the ovum. The probability is that it passed between the ovum and the uterine wall, and in this way abortion was not provoked.

It may also be remarked that during lactation the majority of women do not conceive. This is the case whether they menstruate or not while the child is at the breast. Hence nursing is often protracted for the very purpose of preventing pregnancy. Some women, however, will conceive while nursing, even though menstruation does not occur, and a number of children may be successively born without the appearance of a single menstruation. Hence in all cases of tumor occurring under such circumstances it is best to be guarded in our diagnosis. When a single menstruation occurs during nursing, and this is followed by a diminution or cessation of lactation, we may infer the probability of conception.

d. Case LXVI.—*A multilocular ovarian tumor, coexisting with unsuspected pregnancy, tapped nine times; the uterus punctured at the last tapping; ten days after, miscarriage ensued; death in twenty days.* June 3d, 1859, in company with Drs. Burpee and Drysdale, I examined Mrs. W. M., of Lewisburg, Pennsylvania. She was thirty-five years old, had rather profuse menstruation from the age of fifteen; was married when nineteen, and had four children, the youngest being eight years old. The parturitions were natural, recoveries good, and lactation abundant. She nursed all her children, and the menses returned always before weaning her child. After marriage, menstruation was regular, but profuse until two years before

I saw her, when she had very copious menorrhagia, continuing for five weeks, and amounting at times to flooding. This was followed by irregular menstruation, occurring every two or three weeks for eighteen months, after which, in January, 1859, there was an entire suspension. She had also been troubled with diarrhœa for two years, which still continued at the time of her visit to Philadelphia.

The enlargement commenced with the menorrhagia, and was accompanied by pain in the left iliac region and across the stomach. At the expiration of one year she had to be tapped. She was also actively treated by emetics and purgatives without relief.

In January, 1858, Dr. William Hays, of Lewisburg, saw the patient for the first time. He pronounced her disease ovarian dropsy, and recommended tapping. He drew off a bucketful of chalky-colored, dirty fluid. She had a good recovery afterward. The following June she consulted Professor Pancoast, who advised frequent tappings. Altogether she was tapped eight times, the last time on the 23d of May, only two weeks after the seventh operation. The fluid of all the tappings resembled the first removed by Dr. Hays, except that of the two last operations, which had a bluish tinge and was much thicker. The usual quantity was about three gallons. She had always enjoyed good health previously but after this disease supervened she broke down rapidly and became greatly emaciated.

Although it was only eleven days before that the fluid was removed, she was much larger than a woman at full period. The girth at the umbilicus was forty-five inches, the distance from sternum to pubes twenty-two inches, and between the two superior spinous processes of the ilia twenty-four inches. When lying on her back, the abdomen was very protuberant, and pretty regularly enlarged, with slight inequalities over its surface, showing the outlines of distinct cysts, four or five of which could be readily traced. The cysts, as thus defined, could be fluctuated independently of each other. The lower portion of the abdomen was covered with singular wart-like excrescences, which appeared only after this disease had commenced.

The whole pelvis was occupied with an elastic body. The os tincæ was thrown back toward the sacrum, and open so as to admit the index-finger easily to the first joint. The sound entered without obstruction to the distance of six inches in a central direction with its concavity forward. Considerable stain of blood followed the use of the sound.

I tapped Mrs. M., it being the ninth time. The puncture was first made in the linea alba, five inches below the umbilicus, in the large central cyst, and about thirteen pints of very thick, gelatinous, exceedingly ropy fluid, of a dark olive or bluish tinge, were removed. The last portions consisted of thick flakes of a white cheese-like substance in great abundance. After emptying this cyst, the lower central part of the abdomen was found to be occupied by a more resisting but elastic mass, and as the canula was close to the top of it, I put the trocar into it and took away about half a pint of transparent, thin fluid, not unlike ordinary ascitic fluid, which was followed by some blood. The right side being still large, I withdrew the instrument, and retapped her through that side, removing about eleven pints of a pus-like fluid, which was exceedingly tenacious and ropy, capable of being drawn out several feet without breaking. The abdomen diminished very much in size, but still continued quite large in consequence of the existence of other cysts.

Dr. Drysdale examined two of the fluids. That from the first cyst he describes as "a thick, jelly-like fluid, of a brown color, and opaque. It contained a matter resembling the sputa of old bronchitis.

"*Chemical examination.*—Alkaline; specific gravity 1015. Acetic acid produced no change. A boiling heat coagulated it."

He describes the fluid from the third cyst thus: "This was a thick, opaque fluid of a dirty-yellow color.

"*Chemical examination.*—Alkaline; specific gravity 1045. Acetic acid caused no change in appearance. A boiling heat produced a coagulation, but did not solidify it.

"*Microscopic examination.*—In the first specimen only the granular cell was seen, but in the other cholesterine was also present."

After reviewing the history of the case, and the phenomena associated with the tapping, and making a record of the facts in my case-book, I appended the following note: *Is it possible that this woman is six months pregnant; that I punctured the uterus with the trocar; that the transparent fluid was the liquor amnii; and that the sound was passed six inches into an impregnated uterus? The trocar certainly felt like going into a more substantial body than an ovarian cyst. Time and results must decide.*

I examined the patient again on the 6th of June. No unpleasant symptoms followed the tapping. There was no tenderness of the abdomen, and the percussion sound was resonant over the right side all above the point of tapping, and elsewhere dull. The more solid tumor, which previously was in the lower central portion of the abdomen, then occupied a more oblique position, and was in the right side. This undoubtedly was the uterus, and contained a living fœtus, whose movements could be distinguished. The mass in the pelvis, anterior to the os tincæ, had in a great measure disappeared, no doubt in consequence of the uterus having ascended more into the cavity of the abdomen, it having formed the pelvic tumor. The os tincæ was still open as before. There was no uterine hemorrhage.

Being satisfied of the existence of pregnancy, I was more particular to inquire respecting the exact period of the last menstruation. It occurred during the first week in December, 1858, exactly six months before. It lasted one week, was very profuse, and stopped suddenly. This was followed by sick stomach, longings and cravings for food.

Her husband, being a boatman, took her, by my advice, to Lewisburg on his boat to place her under the care of her own physician, Dr. Hays, until after her parturition, when we could decide upon further surgical treatment. The following extracts from Dr. Hays's letter, dated October 24th, 1859, will complete the history of this case:

"I am sorry that I cannot give you the full particulars of Mrs. M.'s case. A post-mortem examination was denied me, and therefore the precise nature, as well as the extent of the disease, remain undiscovered. You were correct, however, in your views, so far as I was able to confirm them, as the following imperfect description will attest. She left Philadelphia on Thursday after the tapping, and arrived at home the following Saturday (June 11th), traveling in a common freight-boat. On Sunday she was attacked with flooding, but with little if any pain, until three o'clock A.M. of Monday. I was sent for, and arrived at the house about six A.M., and after getting a description of her symptoms, made an examination and discovered a footling presentation. After three or four severe pains, she was delivered of a six, or six and a half months' child. Condition as comfortable as could be expected. On Wednesday morning the 15th, found her doing so well in every respect that I was induced to write you a most favorable description of her case. The letter was actually mailed, but removed from the office, for at eight o'clock P.M. I was suddenly summoned to the house, and found her condition much changed for the worse. A great deal of pain and distress; tympanitis; pulse very much accelerated, one hundred and thirty in a minute; eructations of gas; entire inability to lie down. Thursday, 16th, summoned at five o'clock A.M. The only sleep obtained was while sitting in an armchair. Still unable to lie down. Abdomen very tympanitic; pain in both inguinal regions, especially in the left, darting towards the back. Pulse small and frequent, one hundred and thirty; skin clammy; indications unfavorable. The patient continued to grow worse, and died at midnight of the 23d of June."

In the above interesting case, there was no suspicion of pregnancy either by the patient herself, her own physician, or by me, although there had been a suspension of menstruation for several months. She had been tapped several times during her pregnancy, yet as the tumor was multilocular, and the cysts varying in degrees of hardness and elasticity, the impregnated uterus was mistaken for one of the ovarian cysts, until it was punctured by the trocar, when the suspicion of pregnancy first arose, and its truth was realized by subsequent investigation. This case, therefore, also teaches a most important lesson: that pregnancy should always be suspected in a child-bearing woman, having an ovarian tumor, whenever menstruation is suspended.

e. CASE LXVII.—*A small ovarian tumor mistaken for an enlarged uterus, and subsequently a pregnant uterus mistaken for an ovarian tumor,—both coexisting.* January 2d, 1870, Mrs. J. A. B. came from a neighboring city to consult me. She was thirty-two years old, and was married eighteen months before. She had always been regular until the first week in July, 1869, after which the menses were suspended.

October, 1868, she noticed a small tumor in the right inguinal region, about the size of a hulled walnut, which, having slowly increased, was examined in August, 1869, by her physician, a distinguished medical gentleman of large experience, who considered it an enlargement of the uterus. The following September she noticed that her abdomen was getting larger, and that the original tumor was shifting its position from the right to the left side. The abdomen continued to increase in size, and about the middle of November her physician examined her again, stated that she was not pregnant, and that it was a collection of water. December 15th, 1869, he made another examination, and decided that it was a tumor. After this she enlarged regularly, and becoming more anxious about her condition, she was induced to consult me.

Mrs. B. was a rather tall, slender woman, free from adipose tissue, so that it was comparatively easy to examine an abdominal tumor. The abdomen was about the size of a six months' gestation. An oval tumor, the shape of a uniformly distended uterus, occupied the centre, inclining slightly toward the right side. It was elastic, less so over the right than over the left side. To the left of this larger tumor, on a line with the umbilicus, and in the left lumbar region, could be felt a small, flat, solid tumor, which the patient said was the original tumor noticed in 1868. The percussion sound was resonant on both sides beyond the limits of the central tumor and above it; also between the two tumors, and beyond the lateral tumor near the spine. The lateral tumor itself was semi-resonant, while the central tumor was dull. The small tumor was about three inches in diameter, and felt like a multilocular tumor of the ovary.

On applying the ear over the right side of the large tumor, a sound, resembling the placental murmur, was distinctly perceptible, and, at the same time, a slight, quick movement was observed. The os tincæ was central, the cervix expanded into the tumor above, and, on making pressure between the os and fundus uteri alternately, ballottement was quite apparent, while the same quick movement was detected by the finger in the vagina. The speculum revealed a congested purplish condition of the parts.

The breasts were not enlarged nor painful, but the nipple and its small areola were very dark colored. No enlarged follicles were present. A fluid, however, could be pressed out.

The diagnosis was pregnancy, with disease of the left ovary. I announced my opinion to the patient and sent her home.

Subsequently a letter was received from her husband, which stated that "on the 28th of March, 1870, my wife had a large, likely girl. She still has an enlargement, sometimes appearing larger at one time than at another. As yet it has given her no further trouble."

In the above case, I think it highly probable that the physician was misled by the early history of the case. The patient herself had noticed a tumor in the right inguinal region several months before conception took place, and as she became larger as gestation progressed, it was very natural to attribute this to the development of the tumor. Had his suspicion been excited by the fact that menstruation was suspended after having been regular, and conducted his inquiry with a view to ascertain whether pregnancy existed, it is not likely that he would have committed the error, because the tumor itself was too small to have embarrassed his examination, or to have obscured the signs of such a condition.

f. CASE LXVIII.—*A multilocular ovarian tumor extirpated, unsuspected pregnancy existing at the same time; the sound passed into the uterus on the day of the operation; gestation completed, and a healthy child born.* March 31st, 1870, I performed ovariotomy on Mrs. D. H. R., of Virginia. The history of the case is so well described by Dr. P. J. Winn, of Fluvanna County, Virginia, that I shall use his language. His letter, dated February 20th, 1870, says: "Aged thirty-three years, the mother of three children, the youngest three years old last January; of medium size, good constitution and active habits. Some time in April, 1868, sixteen months after the birth of her last child, she suffered from nausea and vomiting, which were followed by a gradual enlargement of the abdomen, and notwithstanding the menses had not returned since her confinement, she supposed herself pregnant. On the 3d day of January, 1869, near the term of her supposed gestation, the catamenia, for the first time since her confinement, made their appearance, which caused her to send for her physician, who informed her then or a short time thereafter, that she was not pregnant, and proceeded to treat her for ascites. On the 2d of September last, Dr. Richardson requested me to see the case with him. From all the facts then before me, and after a minute examination, I was certain it was not ascites, but evidently a dropsy of some kind, and very probably encysted. Her general health was very good; she was quite active, although there was considerable abdominal enlargement.

"On Saturday last, the 19th instant, I was again called to see her, and heard the following statement: that from the time of my visit in September, her general health improved; she had increased in flesh, was quite as active as at any time before; enlargement increased from umbilicus upward; catamenia regular up to the last seven days, when they failed to appear, and from which time she has been suffering, at intervals, from pain in the abdomen generally, but principally in the left groin and hip.

"The night previous to my visit, about ten o'clock, she was taken with very acute pain in the left groin and hip, which she said was like labor-pain, only more protracted, which pain was attended with copious vomiting at intervals for five or six hours. . . . . . size of uterus and cervix quite normal."

I visited Fluvanna County on March 31st, 1870, and examined the patient. The diagnosis of Dr. Winn was perfectly correct. In making the examination, and having no suspicion of pregnancy, *I introduced the sound into the uterus.*

It entered very little beyond the normal distance. I removed the tumor the same day, and the patient recovered.

August 28th, her physician, Dr. J. W. Richardson, wrote, "I write in regard to our ovarian patient, Mrs. R., and have to say that she has had five attacks of colic at intervals of about three or four weeks, some of them very severe, but they yielded to the usual treatment. Besides this, there seems to be some abdominal enlargement, certainly more than is natural; feet slightly swollen. Menstruation has not been re-established yet. Notwithstanding all this, her general health gradually improves, and she has well-nigh regained her usual flesh and strength."

To this letter I replied, that "in referring to my notes of the case of Mrs. R., I find that, previously to the operation, she suffered from severe pains in the left groin and hip. As it was the right ovary which was removed, may this not be the same kind of attack she was accustomed to before the operation?

"I would suggest, also, an examination per vaginam. It is quite possible, as she does not menstruate, that she may be pregnant; and if so, this might account for her enlargement."

Dr. R. made the necessary examination, and much to his surprise found her pregnant, and afterward wrote to me that she "gave birth to a very perfect, well-developed female child on the 31st of October, exactly seven months from the day of the operation. The mother and child doing remarkably well."

The above case is one of peculiar interest. In the first place, pregnancy was not suspected, although menstruation had been recently suspended; in the second place, a uterus, two months pregnant, was examined by means of the sound without inducing abortion; and in the third place, ovariotomy was performed, and a strongly adherent multilocular tumor was removed, without in the least interfering with the progress of gestation, or subsequently complicating parturition.

CHAPTER VII.

TUMORS OF THE UTERUS.

Perhaps some of the most frequent errors in differential diagnosis occur in connection with fibroid or myomatous tumors of the uterus. They sometimes assume a lateral position in the abdomen, as do ovarian tumors in their early stage. Occasionally, particularly in their advanced and enlarged condition, they resemble cystic disease of the ovaries, being elastic and fluctuating. On the other hand, ovarian tumors, particularly those of a multilocular character, may in their early period resemble uterine tumors in hardness of texture. The general health and visceral derangement may be as little impaired by one form of tumor as the other. This remark is applicable especially to the pedunculated fibroid tumor. Among the rational symptoms the function of menstruation has an important bearing on the diagnosis between these two kinds of tumors. Usually, during menstrual life, ovarian tumors produce little or no change, while after the climacteric period they have seldom any influence in exciting uterine hemorrhage. Tumors of the uterus, however, particularly polypoidal and submucous, are apt to excite menorrhagic menstruation, hemorrhages between the regular periods, and metrorrhagia at all periods of life, even to old age. Intra-mural uterine tumors, when they project into the cavity of the uterus, have more or less of the same tendency; while subserous, sessile, and pedunculated tumors are likely to be exempted from such an influence upon the uterus. In almost all cases of uterine fibroid tumors they enlarge in size before menstruation and diminish after it. As a general rule, ovarian tumors are much more rapid and voluminous in their growth than uterine tumors, much more elastic and impressible, and can be distinctly fluctuated, either throughout the whole mass, or through separate portions.

In their earlier periods they are also much more movable, and as they become enlarged produce more constitutional disturbance.

An examination per vaginam will assist greatly in clearing up any doubt in reference to the diagnosis. In cases of ovarian tumor the uterus is usually more free and movable in the pelvis, and less intimately associated with the tumor above it. In uterine tumor, unless it be pedunculated, the uterus is discovered to be a portion of the tumor itself, is often uneven and nodulated, its cervix deformed and varying in texture, and the whole moving synchronously with movements given to the tumor. To clear up any difficulty, the examination should be completed by the sound. Assisted by this instrument we can often detect uterine tumors at a very early period, and distinguish them from true versions of the uterus, which they not unfrequently resemble. When a tumor occupies the cavity or the wall of the uterus, the sound generally will pass beyond the normal distance of two and a half inches, and proportionately to the size of the tumor. When a tumor is extra-uterine, the cavity usually is not lengthened. To this rule, however, there are exceptions. I have seen cases of very large intra-uterine and intra-mural tumors, where the sound would not enter beyond the normal distance, and even where it was intercepted far short of it; and, on the other hand, I have met with cases where the cavity of the uterus was elongated by both extra-uterine myomata and by ovarian tumors. Again, sometimes the os tincæ is too small to admit an ordinary sound, or, having entered, it may be arrested by the narrowing of the cervix at the os internum, or by an acute angle in the cervix.

By means of this valuable instrument, aided by manipulations in the vagina, rectum, and over the abdomen, we can also usually ascertain the point of origin of a tumor, and its locality in the walls of the uterus, or decide whether or not it is pedunculated. If, for instance, it occupied the posterior wall, the sound will take a direction forward, while the finger in the rectum, or in the vagina, will detect the fibroid mass between it and the sound. This state of things closely resembles retroversion of the uterus, and has been mistaken for it. Again, suppose a tumor occupied the anterior wall, the sound will take a course backward, while the finger in the front part of the vagina, or the hand over the pubes, will readily discover its locality. This may be mistaken for anteversion of the uterus. If a tumor, whether uterine or ovarian, be attached to the external surface of the uterus by a long stem or pedicle, it can be moved in various directions independently of the uterus, the motions given to the former communicating no impulse, or very little, to the latter, and *vice versa.* A short pedicle, however, whether of a uterine or ovarian tumor, as well as adhesions between the latter and the uterus, will, under the influence of similar manipulations, impart more or less motion to the uterus, but yet not corresponding in extent with that given to the tumor. The introduction of the sound, whilst pursuing this investigation, will enable us to distinguish these points much more distinctly, as the impulses received by the uterus also affect the sound in the hand, and its motions may be watched by the eye of the operator or his assistant. Besides, on reversing the method of examination, in order to observe the influence upon the tumor arising from motions given to the uterus, the sound is also essential.

In examining tumors, particularly those that are pedunculated, it will be found highly advantageous to have the assistance of another surgeon, or of an intelligent nurse. The several manipulations of the tumors should be made by one person, while the other watches the effect they produce upon the uterus and sound, and this ought also to be the case when the method is reversed. The mind in this way more clearly defines the extent of the influences operating upon the parts under investigation.

The above observations on the sound are mainly extracted from my prize essay on "Fibrous Tumors of the Uterus," published in the "Transactions of the American Medical Association" for 1853.

In the consideration of this question it will be best to divide the subject into two parts, viz.: A, hard fibroid tumors, and B, soft fibroid, or fibro-cystic tumors.

A. **The diagnosis between ovarian and hard fibroid tumors.**—In extra-uterine pedunculated fibroid tumors, many of the signs may so closely resemble those of ovarian tumors that it will require an experienced observer to distinguish one from the other. In both, the pelvis may be unoccupied by the tumor, the uterus may be *in situ*, perfectly normal in structure and size, quite movable and free from the tumor, and the respective tumors movable in the cavity of the abdomen without communicating any impulse to the uterus. Menstruation, conception, and gestation may proceed without interruption in both conditions. The usual differences, however, must be looked for in the weight and solidity of the two kinds of tumor. These fibroid tumors are generally hard, very resisting to pressure, non-fluctuating, and indicate more weight upon handling than do ovarian tumors. When these characteristics are associated, we should infer the existence of a fibroid tumor of the uterus. Ovarian tumors are generally more or less elastic, yielding to pressure all over, or at one or more points, fluctuating, and manifesting less weight upon handling than fibroid tumors. When all these signs are associated, ovarian disease is indicated. Still, these distinctions are merely general and comparative. The softening or degeneration of a hard fibroid tumor may cause it to partake of all the characteristics of an ovarian cyst, while a multilocular tumor of the ovary, with hard, interstitial deposits, may lead the examiner to mistake the latter for a uterine tumor.

I shall, however, illustrate these observations by my clinical experience.

a. CASE LXIX.—*A hard intra-uterine fibroid tumor mistaken for an ovarian tumor; tapping attempted; the sound no aid in the diagnosis; gastrotomy; recovery from the operation; subsequent death, and autopsy.* May 12th, 1849, Miss M. T., aged thirty-three years, consulted me and gave the following history of her case. Menstruation commenced at the age of sixteen. It was painful until an attack of fever in 1842, after which she did not suffer from it. It was always regular until the tumor appeared in July, 1845. When first noticed, the tumor was in the right inguinal region, as large as an orange, and pyriform. It was smooth, hard, unyielding, and perfectly movable, so that it could be pushed across to the linea alba, be depressed and elevated, and roll from side to side on turning the body. Upon removing the pressure, the tumor would again resume its original situation. She described the tumor as increasing and diminishing in size repeatedly. In 1848 she was treated in the city of New York for ovarian dropsy. In March, 1849, she consulted Professor March, of Albany, who called it an ovarian tumor, and thinking that it was filled with fluid, attempted to tap it, removing only a teaspoonful of blood. The tumor was penetrated by the trocar about three inches, requiring considerable force. A probe, passed through the canula, came against a hard, resisting substance. The wound healed up kindly. Dr. March afterward considered the tumor fibrous, but still ovarian. Dr. Parsons, of Providence, Rhode Island, who examined her in the fall of 1845, also was of the opinion that the tumor was ovarian.

During the summer of 1847, the patient had menorrhagia for two months, with only one week's intermission, after which the flow was regular and gradually diminished in quantity, though slightly coagulated. There never was any difficulty in urination or defecation.

I examined the patient in company with Drs. E. A. Atlee and Grant. When on her back, the abdomen appeared quite prominent, but uneven. The shape of the tumor was oblong, and it occupied a position obliquely across the abdomen: its longest diameter extended from the right hypochondriac to the left inguinal region, and was thirteen inches; its shortest diameter cut this at right angles, and was eleven inches. The resonant points on percussion were the epigastric, left hypochondriac, and left lumbar regions, all other points being dull. The tumor was firm, solid, slightly elastic, free from fluctuation, movable in all directions by employing considerable force to overcome the resistance of the tightly distended abdominal walls. The subcutaneous tissue was well loaded with fat, and somewhat œdematous. The mark of the trocar was visible three inches to the right of the linea alba. Upon making a vaginal and rectal examination, the tumor was found to occupy a large portion of the pelvis. The os tineæ could not at first be discovered, but by great pressure with the index-finger I succeeded in reaching it high up back of the tumor. It seemed to be flattened by the pressure of the tumor, and was open sufficiently to admit partly the point of the finger. The tumor was movable between the hand on the abdomen and the finger in the pelvis. The sound readily entered the patulous os, but could not be passed beyond an inch, until the tumor was lifted up, when it entered two and a half inches. It took a direction toward the right side. While the sound was in the uterus, motion given externally to the tumor communicated scarcely any impulse to it, and *vice versa.* The bladder, as the sound indicated, occupied the right side of the pelvis.

When the history of the case was compared with the condition of the patient as determined by the examination, the diagnosis was rendered difficult and obscure. The prominent indications of its early history were those of an ovarian tumor, and the eminent surgeons who had examined it so considered it. It was to be regretted, however, that no pelvic examination had before been made, as its real nature probably would have been more readily disclosed, by such an investigation, before it had assumed so formidable a size. Apart from its history, I should have considered the tumor to be either in the cavity or in the walls of the uterus; but viewing it in that connection, and respecting the opinion of those gentlemen who had previously examined the case, I was willing to believe it to be extra-uterine, consisting of either a fibrous tumor of the ovary, or of a pedunculated fibroid tumor of the uterus, and that its extirpation by gastrotomy was possible. It was, therefore, decided in consultation that, as the patient had come a considerable distance, and had urgently solicited an operation, the nature and dangers of which had been fully explained to her, it should be attempted,—at least one of exploration.

One week afterward the patient was examined by my brother, Dr. John L. Atlee, of Lancaster, who coincided in opinion.

Next day the abdomen was opened, and the mass was turned completely outside of the cavity, so that it could be readily examined. It consisted of the uterus itself, which was distended by a solid body within its walls. Its peritoneal coat was elevated in several places from the surface in the form of small cysts, filled with yellowish fluid. One of these, about the size of a walnut, was on the fundus, another larger and more irregular on its left side, and other smaller ones lower down. The right ovary was enlarged to the size of a small orange, and the left one was three times its natural bulk. Both ovaries were attached to the lower part of the tumor, so that the great body of the growth seemed to have been developed in the fundus of the uterus. Such being the condition of things, the uterus and both ovaries involved, all requiring to be extirpated, it was considered improper to proceed. They were returned, the wound closed, and the patient rapidly recovered.

About four weeks after this I examined her again. The sound passed, as before, to the distance of two and a half inches, when its progress was arrested. By urging it onward, however, it appeared to pass between the walls of the uterus and the tumor; at the same time a sensation was communicated to the hand as if weak adhesions were lacerated by the end of the sound. After destroying these apparent adhesions, the sound passed up a considerable distance. The papillary form of the cervix was entirely lost, but the sound showed that at least one inch of the cervical canal was traversed by it before getting within the interior.

This examination, taken in connection with the appearance of the parts exposed by the operation of gastrotomy, induced me to conclude that the tumor existed within the cavity of the uterus, attached extensively to its internal surface.

The patient afterward went home. She returned again in about six months in the enjoyment of tolerably good health. The abdomen was larger, the tumor wider and higher, which, I think, was explicable by the position of things in the pelvis: the tumor was elevated out of the cavity of the pelvis, the os tincæ was thrown more forward, and was much more closed.

Shortly after her return to Philadelphia, the patient was seized by a violent chill, followed by considerable fever. This was soon succeeded by the development of erysipelatous inflammation along the track of the abdominal cicatrix, which spread rapidly in every direction, invading not only the skin, but also the serous and mucous tissues. Vomiting and inveterate diarrhœa, with an aphthous and inflamed condition of the mouth and throat, followed. The erysipelatous inflammation and fever continued with great violence, until the powers of life gave way, and the patient sank.

On opening the cavity of the abdomen several hours after death, the cicatrix was found strongly adherent to the anterior face of the tumor; a considerable amount of dirty-looking serum had collected in the cavity of the peritoneum, and loose adhesions existed in several places, indicating *recent* inflammation. The tumor itself had very much the same appearance as at the time of the operation of gastrotomy, with the exception of the cystiform bodies, which had disappeared, save the one on the fundus, which had not altered in size, although it was more solid. The ovaries had not changed in appearance. The right one broke in attempting to remove the tumor, and a greenish-yellow fluid escaped. The solidity of the tumor had greatly diminished, it being much softer than before.

The mass was removed and examined. It was laid open on its posterior face from the os tincæ to the fundus, so as nearly to bisect it. This disclosed a fibroid tumor in the interior of the uterus, sealed firmly to it at every point, except a space three-fourths of an inch in diameter, communicating with the mouth of the womb. Upon passing a sound into this space, it went directly up to the right Fallopian tube, and was there arrested. This track was lined by mucous membrane, and a little over two inches in length. It was the only part of the interior of the uterus supplied with mucous membrane; every other portion, even round the left Fallopian tube, was closely adherent to the exterior of the tumor. The tumor itself had evidently degenerated. Large portions of it had softened down into a brain-like substance, while others retained the fibroid character.

The autopsy satisfactorily explained some points of particular interest in this case. When making the examination, to decide upon the propriety of gastrotomy, it will be remembered that the sound entered the uterus only the normal depth. It must, therefore, have followed the track to the right Fallopian tube, which was in reality the only *cavity* in the uterus, and, as the development of the tumor and uterus took place principally above this point, and as every other part of their adjacent surfaces was adherent, the want of correspondence between the size of the uterus and the depth of its cavity is thus explained. The sound being one of the means of diagnosis in abdominal tumors, this case shows that, although it may enter no farther than the normal distance, this circumstance alone is not an infallible indication of the real size and condition of the uterus. The question also arises, why, during the first examination, did the movement of the tumor impart so little motion to the sound? Because the sound occupied so small a space, and that at the pivot or point on which the large tumor revolved, that considerable motion might have been given to the fundus of the tumor at the same time that scarcely any occurred within the pelvis,—just as happens in the motion of a wheel: the contrast between the extent of motion of the periphery and that of the centre of the hub is very great. Had the uterine cavity, as is usually the case, been elongated according to the size of the tumor, the sound would have traversed it to the fundus, and would necessarily have partaken of all its movements.

After the patient had recovered from the operation of gastrotomy, the sound was employed the second time. It again passed to the same distance as before without impediment, and upon urging it onward gently, it appeared to overcome weak adhesions between the tumor and uterus, and finally entered a considerable distance. The sensation communicated by the sound, of lacerating adhesions, no doubt was caused by the end of the instrument penetrating the softened substance of the tumor itself. This was confirmed by the fact that, in plunging the sound into the specimen, precisely the same sensation was produced. It is barely possible that the sound might have entered the Fallopian tube.

b. Case LXX.—*A hard extra-uterine fibroid tumor mistaken for an ovarian tumor, and removed by gastrotomy; recovery; death several years afterward; both ovaries discovered by a post-mortem examination.* June 8th, 1844, I was consulted by Miss L. P., aged twenty-four years, for an abdominal tumor. Her physician, Dr. G. T. Dare, wrote to me as follows:

"In the spring of 1843, she began to have frequent desires to urinate, but her attention was not particularly drawn to the circumstance until the 15th of October, 1843, when she felt, for the first time, a tumor in the right groin, about the size of a pullet's egg. At this time she is not able to ride more than a mile without stopping to pass water, and she rises once or twice, sometimes oftener, during the night, for the same purpose. Her menstruation has always been regular, but painful. It, however, has latterly diminished in quantity, is sometimes clotted, and is followed for a short time by fluor albus."

I examined the patient in company with my brother, Dr. John L. Atlee, and found a tumor occupying the hypogastric and right inguinal regions, resting closely on the pubic bones, being prominent above the symphysis, and gradually retreating toward the spine and the umbilicus. The tumor was hard, resisting, somewhat uneven, and movable, and could be rocked upon the brim of the pelvis over the left inguinal region.

So soon as the finger entered the vagina, it came against the convex surface of a hard tumor immediately behind and below the arch of the pubes, and resting firmly against it. The rounded surface extended throughout the pelvis, pressing the uterus down against the perineum and rectum so firmly that it required some force to insinuate the finger between them. The neck of the uterus lay horizontally on the perineum, with the os presenting forward, and pretty firmly fixed in its position by the pressure of the tumor. The texture and size of the uterus were not altered. I now attempted to raise the tumor out of the pelvis, but it required considerable and continued force to effect it. I elevated it, however, sufficiently high for my brother to get his hand partially beneath it at the pubic region, and to sustain it while I continued the vaginal examination. The uterus now took nearly its natural position, became movable, and the finger could be passed between it and the tumor, so as clearly to show that the tumor and the uterus were distinct. Motion imparted to one did not affect the other.

The finger, on being introduced into the rectum, came against the solid convex tumor, which appeared to rest firmly against the sacrum. Beneath the tumor, and lying against the anterior wall of the rectum, the fundus uteri could be felt; and when the tumor was elevated, the finger could be passed between the two, and, in this position also, both were movable independently of each other.

I next introduced a sound into the bladder, but instead of passing anterior to the tumor, it kept beneath it, going backward horizontally, so that it could be swept from side to side over the inferior convex surface of the tumor, showing that the bladder was beneath it, and that it was impossible for this organ to rise by distention above the pubes, being resisted by the weight and position of the tumor. Hence the urinary trouble. The sound could not enter or be introduced into the uterus.

After viewing the case in all its aspects, my brother and myself considered it to be one of ovarian tumor, and suitable for extirpation. Accordingly on the 28th of August the tumor was removed by the abdominal section.

On examining the tumor after its removal, it was found to be very dense and solid. When incised, the cut surface had a beautifully variegated flesh-colored appearance, and was studded over with stellated points, the radii formed of alternate whitish and flesh-colored lines, which also ran in other directions, and intermingled with each other under various forms. Small orifices could be seen opening on to these cut surfaces, and must have been vessels cut across on making the section. The tumor was invested with two distinctly marked tunics,—the peritoneal and the proper coat, both very closely united, and both dense. The proper coat was less firmly united to the tumor than to the peritoneal coat. At several places these two coats were separated in patches about the size of a finger-nail, and looked like emptied blisters. The tumor was nodulated, had a pinkish-white color, and in its external aspect had all the appearance of some specimens of encephaloid disease. Large vessels could be traced ramifying under its coats, and concentrating toward the site of the pedicle, and terminating with open mouths upon its surface. One of these vessels was as large as a common-sized goose-quill. The tumor was of a uniform structure, and was considered fibrous or fibro-cartilaginous.

According to the diagnosis, the above case was thought to be one of ovarian tumor; and, during the excitement of the operation, a doubt of the correctness of this opinion did not arise. A close examination of the tumor afterward, and a calm review of all the circumstances, led me to question the existence of ovarian disease. The peculiar form of the pedicle,—its vascular, fleshy, and resisting structure, entirely free from any of the broad ligament, free from any evidence of the Fallopian tube, and having almost a sessile union with the uterus; the uniform and fibrous structure of the tumor,—no disintegrated ovary traceable within it, the disease not having been malignant; the investment of the tumor having been perfectly smooth and free from folds or shreds of membrane; and the connection of the tumor with the uterus,—all induced me to doubt its ovarian character, and to consider it a fibroid tumor of the uterus.

The above notes are extracted from the *American Journal of the Medical Sciences*, volume ix. p. 309, where the case is published in detail.

The patient fully recovered her health, but several years afterward died of phthisis pulmonalis. An autopsy was made, *and both ovaries were found normal.*

From the early date of this case, it will be seen that the diagnosis was made when I had but little experience in the examination of these diseases. At the present time such an error would not be likely to occur.

c. CASE LXXI.—*A hard extra-uterine fibroid tumor; diagnosis doubtful; the tumor removed by gastrotomy; both ovaries were seen to be healthy.* October 29th, 1849, I was consulted by Mrs. T.

H., aged thirty-nine years, for a tumor of the abdomen. She first menstruated at the age of fourteen, and was always regular. At eighteen she married, but never conceived. In 1843, a tumor, as large as an egg, was first noticed in the left inguinal region. It was very hard and immovable. In June, 1845, while whitewashing a ceiling, something suddenly gave way within her, and the tumor tilted over, taking an oblique position across the abdomen. A few hours afterward a copious hemorrhage occurred from the bowels. After this the tumor would roll from side to side quite loosely, and continued to grow until 1847, when she was examined by Professor Samuel McClellan, who considered it an ovarian tumor and discountenanced any operation. Before menstruation, the tumor always became tender and enlarged, and afterward it would become less sensitive and smaller.

October 31st, I examined her in company with Drs. E. A. Atlee and Grant. When lying on her back with the abdomen exposed, the enlargement, in size and shape, resembled that of a seven months' pregnancy. The tumor was central, oblong, hard and resisting, and its surface somewhat irregular. On the right side of it, and fixed to it, was a hard mass, and on its left side was a ridge running perpendicularly down on it. It extended above the umbilicus, and laterally to both inguinal regions. It was movable from side to side, and could be partially elevated.

Per vaginam, the tumor could be distinguished, with its convex surface behind the pubes, occupying a position between the pubes and cervix uteri. The body of the uterus was between the tumor and the rectum, curved upon the former, while the cervix, which appeared elongated, lay horizontally, with the os tincæ presenting anteriorly. The cervix was well defined, and did not seem to be incorporated with the tumor. The sound entered over three inches into the uterus, which could be moved by it from side to side behind the tumor, while motion of the latter was only partially communicated to the sound.

Our diagnosis was that it was either a fibrous tumor of the ovary, or a fibroid tumor of the uterus, with a short pedicle.

November 24th, 1849, I removed the tumor. It was attached to the anterior wall of the uterus by a fleshy pedicle, one inch thick and half an inch long. The uterus was somewhat hypertrophied, but both ovaries were in place and healthy.

The tumor was examined. Several large gaping vessels were noticed upon the cut surface of the pedicle, and large vessels could be traced under its peritoneal coat over the whole surface of the tumor. It was decidedly fibroid, was very firm and solid, had a nodulated surface, and anatomically resembled the tumor in Case LXX.

The history of the tumor in the above case, its origin in one side, its extreme mobility, and the absence of hemorrhage, were calculated to lead to the opinion that it was a fibrous tumor of the ovary, although the same symptoms would be associated with a pedunculated fibroid tumor of the uterus.

d. Case LXXII.—*A hard, extra-uterine fibroid tumor, first regarded as ovarian, but finally correctly diagnosticated; gastrotomy.* In January, 1851, I was consulted by Mrs. T. G. A., aged forty-five. Menstruation commenced at the age of fifteen, was always regular, the intervals being three weeks, and the duration about four days. Occasionally the discharge was clotted and accompanied by bearing-down pains. She was married at the age of twenty-one, but never conceived. For two or three periods soon after marriage she suffered greatly during menstruation. The pressure of the tumor produced great distress in urinating. The changes of weather caused such an effect upon her condition that she could predict the coming of a storm, and this had been the case only since the existence of the tumor. She had no constitutional tendency to disease, except scrofula.

The first knowledge she had of the existence of the tumor was in April, 1848. The tumor was then discovered accidentally by the abdomen being pressed against a hard substance. At that time it was as large as an infant's head. It was on the right side, and was regarded by her physician as an ovarian tumor.

When the patient was lying on her back, the protuberance of the abdomen was equal to an eight months' gestation. A tumor could be felt in a central position, extending upward to a point midway between the umbilicus and sternum, and laterally beyond the two lineæ semilunares. It was solid, incompressible, and somewhat movable.

The pelvis was entirely free. The os tincæ was thrown back, and the cervix was intact. The opening of the os was so small that I could not introduce the ordinary sized uterine sound. On a subsequent visit, however, by the aid of the speculum, I succeeded in passing a very small sound into the cervix to the distance of an inch. The canal was small. Movements given to the tumor did not affect the sound, and *vice versa*.

In April, 1851, I examined the patient again in company with Professor Grant. The tumor had increased in size, and by a vaginal examination I could detect its lower end in the superior strait of the pelvis. I then succeeded in introducing a sound into the uterus to the distance of three and a half inches. It took a direction toward the left groin, but the end of the sound could not be felt through the abdominal wall. The uterus could be played about by the sound, but by no means freely. Upon moving the tumor from side to side, the handle of the sound rolled to some extent, but not as much as it would have done had the tumor been intra-uterine or intra-mural. Moving the tumor in a longitudinal direction did not affect the sound. Movement of the sound had no effect upon the tumor.

The diagnosis was, an extra-uterine pedunculated fibroid tumor, capable of being removed.

May 20th, 1851, the tumor was removed by gastrotomy, and was found to be attached by a short fleshy pedicle to the posterior wall of the body of the uterus. It was a fibroid, possessing the characteristics described as belonging to Case LXX. The uterus had several small fibroids on its body. The ovaries were healthy. The patient did not recover from the operation.

c. CASE LXXIII.—*An intra-mural fibroid mistaken for an* *ovarian tumor; diagnosticated by the sound.* I received the following letter from Charles M. Lee, M.D., of Fulton, Oswego County, New York:

"October 5, 1865.

"Dr. W. L. Atlee.

"Dear Sir,—Case of Miss J. M. H., aged forty-two years, unmarried, menses regular, and general health quite good, and can visit and be around quite comfortably. First appearance of the tumor about three years ago, on the right side, about the size of an orange, and it has steadily increased until she now presents the appearance of a woman eight or nine months pregnant, and measures around the umbilicus thirty-five inches, she being of medium height and rather spare. She can eat about half her usual meal at a time, and her breathing is impeded on exertion or lying down. About fifteen months ago she had hemorrhage of the uterus, which she says followed immediately after a menstrual period, and she refers the cause to overwork. She has had no return since, and no ill results followed, except the prostration from loss of so much blood.

"Professor W. Parker examined the case two years, and one year ago, and pronounced it ovarian tumor. I have only given her a cursory examination and coincide with him in opinion.

"She says she does not wish to lessen her chances by delaying the operation, and will be governed by your decision in reference to *time.* She purposes going to Philadelphia. If you can give an opinion upon the data I have given you, please do so. She is rather anxious that the operation should be performed, and I think would like to have it done this fall, fearing that her general health might materially suffer soon."

In reply to Dr. Lee's letter, I said that "I never pretend to give a positive opinion without a personal examination of the patient, but having great confidence in your judgment and that of Dr. Parker, I have no doubt of the case being ovarian. The only question is as to the source of the hemorrhage."

Having to make a professional visit to the city of New York, I requested this lady to meet me there. She met me on October 25th, 1865, when I examined her in company with Dr. D. F. Fetter. The abdomen was as large as that of a woman at eight months' gestation, and similar in shape. The tumor was smooth over its whole surface, elastic, and non-fluctuating. It was movable in all directions. The os tincæ was central in the pelvis, and the cervix small. The uterine sound entered readily and passed up posteriorly *to the distance of nine and a half inches*, and its end could be felt at the top of the tumor through the abdominal wall above the umbilicus. While in place, *every motion of the tumor was transmitted to the sound, and vice versa.*

The diagnosis was positive: an intra-mural fibroid tumor, occupying the anterior wall of the uterus.

In the above case the sound proved a valuable means of diagnosis, indeed an essential aid, as the external characteristics were likely to mislead. If the gentlemen who examined the patient and pronounced it ovarian had resorted to the use of the sound, they could not have failed to detect the real character of the disease. The tumor being elastic, the os uteri central, the cervix small, and the pelvis free from the tumor, were all indications of ovarian disease, and calculated to deceive the observer, but that invaluable instrument, the uterine sound, at once corrected the diagnosis.

f. CASE LXXIV.—*A hard extra-uterine fibroid tumor accompanied by ascites, resembling ovarian dropsy; gastrotomy; the tumor not removed; death three days after.* June 28th, 1870, I visited Mrs. R. M., in consultation with Dr. L. Turnbull. She was thirty-two years old. Menstruation first occurred at the age of thirteen years, and continued to be regular afterward. She married at the age of nineteen, but for one year before her health was bad, being affected with some spinal trouble. After marriage, she received treatment for granular inflammation of the uterus. In 1862, she had uterine hemorrhages lasting three or four weeks at a time, and accompanied by the escape of large clots. Upon examination, her physician discovered a large polypus, described by her to be as large as a child's head with a stem as thick as the arm, which he removed.

About one year before I saw her, she had a severe attack of pain in the right side, which was followed by very great soreness of that side. She had never conceived.

Upon making an examination I found the superior strait of the pelvis occupied by hard deposits, which could also be felt through the vagina, and the uterus was fixed in position. The examination caused pain, particularly in the right inguinal region.

Diagnosis.—Inflammatory deposits.

August 1st, 1871, I was requested to see the patient again by Dr. Turnbull, as she was becoming very solicitous for an operation. Since my former visit the abdomen had become very much enlarged, and was quite dropsical. When lying on her back, the percussion sound was resonant over the epigastric and right hypochondriac regions, and all along down the right side, but dull elsewhere. When lying on her right side, the resonant sound was discovered over the left hypochondrium, and after reversing the position, the right side, which was resonant in the supine position, became dull. The abdomen was uniform in shape; there were no nodules or ridges traceable; and fluctuation was perceptible in all directions. The examination per vaginam discovered the superior strait to be crowded and the uterus fixed in position. The sound entered one and a half inches. The patient still complained of great soreness in the right side.

Diagnosis.—Not ovarian. In order to decide what it was, I tapped her. The trocar was passed through the linea alba about four inches below the umbilicus, and, in consequence of the resonance over the right side, it was directed toward the left side of the cavity. Sixteen pints of a deep-yellow fluid escaped, containing many shreds of lymph of a whitish color. The fluid coagulated by heat. As the fluid escaped, a hard tumor became very prominent in the centre of the abdomen. It was oblong, extended from a point above the umbilicus down into the pelvis. It was rather nodulated, and was evidently attached to the uterus, as they both moved together as one body.

The diagnosis now was fibroid tumor of the uterus with ascites, and inflammatory deposits in the pelvis. I decided that the case was unfit for an operation.

A specimen of the fluid was handed to Dr. Mears, who reported that it was not ovarian.

The future history of the case was communicated to me by Dr. Mears, and I record it in his own words:

"On the 16th of September, 1871, I was asked by Professor D. Hayes Agnew to see, with Dr. Turnbull and himself, a case of abdominal tumor. On the 18th, I called with him upon Mrs. M. Dr. Turnbull, the family physician, was present. At their request I made an examination of the patient.

"I found the abdomen enlarged to the size of a woman pregnant seven months; surface smooth and uniform in shape. Fluctuation was distinct and uninterrupted. Dullness existed over the entire surface. Change of position rendered the lumbar regions resonant. Deep pressure detected a firm, pear-shaped tumor occupying the umbilical and hypogastric regions of the abdomen. It could be distinctly outlined. On making a vaginal examination, the finger reached the os tincæ readily. It was elongated into a teat-like process. Anteriorly the finger passed up, from this process, over a projecting mass which apparently occupied the anterior wall of the uterus. The connection between the os tincæ and this mass seemed to be uninterrupted. Placing the finger on the os and making pressure over the abdominal wall, I was enabled to obtain control of the tumor, and move it between the two fingers.

"The examination seemed to indicate that the tumor was solid in character, and in all probability connected with the uterus. I therefore stated that I regarded it a solid tumor of the uterus associated with ascites.

"As the patient was very desirous that an operation should be attempted, Professor Agnew decided to make one of exploration, and by this means determine as to the feasibility of removing the tumor.

"On September 30th, the patient was placed under the influence of ether, and an incision three inches in length was made in the linea alba. A quantity of fluid, three or four basinfuls, escaped from the abdominal cavity. On introducing the finger, a solid tumor was felt, somewhat elastic, adherent to the abdominal walls by fragile bands, which were broken up. On carrying the finger down between the bladder and the position of the uterus, it appeared to pass to the vagina, and on introducing the finger of the other hand into the vagina, the two could be brought into contact, the wall of the vagina only intervening. My large trocar was plunged into the solid tumor, evacuating a very small quantity of bloody fluid. On introducing the finger into the puncture made, it was found that the interior of the tumor was divided into numerous cells, separated by fibrous septa. These contained a viscid, transparent, amber-colored fluid with flocculi. Under the microscope, the fluid obtained by the puncture was found to consist of blood globules, oil, epithelial cells, and a small quantity of delicate fibrous tissue. It contained about ten per cent. of albumen.

"In the fluid removed from the abdominal cavity there were masses of lymph; a fibrinogenous substance formed in it soon after removal,—this was removed, and another mass formed.

"Three days subsequent to the operation the patient died. No autopsy was made. At the time of the operation, the lateral surfaces of the tumor were not explored, owing to the danger which it was thought might arise from the separation of the bands of adhesions.

"The tumor, which was not removed, appeared to correspond in character to that described by Rokitansky as 'fibrous tumors, the interstices of which are dilated into cells or cavities, containing a serous fluid from excessive exhalation of the intervening cellular tissue.' He says that they are extremely vascular. In this case it was necessary to ligate one vessel in the walls of the tumor which had been divided by the trocar."

g. CASE LXXV.—*Fibrous tumor of the ovary; diagnosis uncertain; tapped ten times; death after the tenth tapping; autopsy.* March 6th, 1867, while on a visit to the city of New York for the purpose of performing ovariotomy, I received a telegram from Dr. G. J. Fisher, of Sing Sing, urging me to see a patient there in consultation with him. I made a hasty visit to Sing Sing on the same day, and saw Mrs. J. W. with him. Dr. F. informed me that she had been tapped seven times. The fluid was transparent, olive-colored, and coagulable. After the fluid was drawn off, there was left a hard, fibrous-like mass in the lower central portion of the abdomen, more or less movable.

The abdomen was large and uniformly distended. Its lower portion and the inferior extremities were œdematous. No inequalities, nodules, or ridges could be detected in the distended abdomen; fluctuation was distinct everywhere; and the only resonant percussion sound was in the right lumbar region. The uterus was of the usual size, movable, and admitted the sound to the normal distance. The patient was much emaciated.

Dr. F. then tapped her, while sitting up, of sixty-nine pints of very clear, transparent, slightly olive-colored fluid, which was coagulated by heat. After having been tapped, I attempted again to examine her, but there was such extreme tenderness of the abdomen that the examination was very unsatisfactory. Besides, the œdema of the abdominal wall was so great that it further obscured the parts within. I could, however, trace out a pretty large, smooth, round, very hard tumor, occupying the lower portion of the cavity, and movable in a slight degree independently of the uterus.

While the fluid was escaping through the canula, and the walls of the abdomen were gradually collapsing, I repeatedly percussed them, but could not detect the intestines floating on the fluid,—so that the inference was that the dropsy was cystic, or, if ascitic, that the intestines were retained by some cause in the posterior part of the abdomen. The fluid was not subjected to microscopic examination, which would have decided its origin.

Under the unfavorable circumstances of the examination, the diagnosis was necessarily obscure: it was either a fibrous tumor of the ovary, or a pedunculated fibroid of the uterus.

My advice to Dr. Fisher was to examine again after the tenderness and œdema had disappeared, and if he found a very intimate connection between the uterus and the tumor, to abandon all idea of an operation; but if he found them movable independently of each other, to make an exploring operation and be governed accordingly.

Afterward I received a letter from Dr. Fisher, dated June 6th, 1867. The patient had been tapped altogether ten times, the last time on May 7th. He wrote:

"The patient whom you saw with me died May 17th, suddenly, having been very well for several days previous,—the immediate cause I could not determine. I made a post-mortem examination, found the tumor to be a solid, fibrous, almost cartilaginous mass, round, hard, smooth, almost eburnated on the surface,—or rather presenting the appearance of the surface of a joint. It was ovarian. The broad ligament formed a short, broad pedicle with the uterus, which accounted for the facility with which the mass was moved about by the sound, and also proved to *my* mind the impracticability of an operation. The tumor was free, on one side a sort of cyst containing serum, and a gelatinous substance was found, which appeared like a disintegration, or breaking down of the mass. The peritoneum was thickened and changed almost into semi-cartilaginous structure.

"This case illustrated the necessity of care in regard to the diagnostic value of the mobility of the tumor by the uterine sound, and the necessity of noting the *depth of the uterine cavity as measured by the sound.* For in this case the sound only passed two and a half to three inches into the uterine cavity, yet it moved the tumor up and down, right and left, with perfect facility, and as if it and the uterus were one mass, and so I supposed it was during life, all in consequence of a very short pedicle,—say one and a half to two inches."

I have introduced the above case here, although not a uterine fibroid tumor, to show how very closely an ovarian tumor may resemble it. The post-mortem report does not state whether the fluid was contained in a cyst or in the peritoneal cavity; and if in the latter, it does not explain why the usual resonant percussion sound was absent. I infer, however, the dropsy to be peritoneal, from the fact that "*the peritoneum was thickened and changed almost into semi-cartilaginous structure*," so that the intestines were glued together and bound down, and could not float on the fluid.

The remarks of Dr. Fisher respecting the use of the sound are very just. The length of the pedicle, however, would not have rendered ovariotomy impracticable, while the operation would have afforded the patient the only chance of life. Yet these are the very cases—a solid tumor and a short pedicle—that the ovariotomist would prefer not to encounter, nevertheless the removal of which professional duty requires him to undertake.

B. **The diagnosis between ovarian and fibro-cystic uterine tumors.**—If the errors of diagnosis are frequent in cases of hard fibroid tumors, they are much more so in those of soft or fibro-cystic uterine tumors. With regard to the former, experience has taught me that it is exceedingly rare to meet with a *hard fibrous tumor of the ovary*, and that when a tumor possessing the usual characteristics of a fibroid—being hard, solid, not impressible, non-fluctuating—is found in the abdominal cavity, we may, as a general rule, decide it to be *uterine*. It must have been noticed, while discussing this part of the subject, that I drew the cases principally from the records of my earlier practice, when I was yet a novice in the study of this subject, and that I have freely confessed to the errors of diagnosis in these very cases. Such errors need not be repeated. But with regard to the *soft fibroids*, or fibro-cystic tumors, no amount of experience will avail the surgeon in making a differential diagnosis by the ordinary methods of examination. It cannot be elucidated by the sound. The tumor is extra-uterine, and may grow to an immense size; its development, instead of being slow, as is the case with the majority of hard fibroid tumors, may be as rapid as an ovarian tumor; the uterus may not be involved, or to a very small extent, not any more than is usually found in cystic disease of the ovary; palpation and percussion, apart from fluctuation, are identical in both kinds of tumor, and even fluctuation itself may be similar; and the history may be the same, or similar in both, even as to menstrual life and the influence on the general health. Indeed, it is as difficult to distinguish between an extra-uterine soft fibroid tumor and a multilocular ovarian tumor, as it is between a cyst of the broad ligament and a unilocular tumor of the ovary. They are, however, both distinguishable, and by the same means, viz., *tapping*. *I believe a positive diagnosis can be made only by tapping.* But I will refer to this again. In my earlier investigations of abdominal tumors, I have confounded the soft fibroid tumor with ovarian tumors, and this has been the case also with the most distinguished ovariotomists. T. Spencer Wells, of London, when on a visit to Philadelphia, in September, 1867, examined a patient at my request, who was presented to him as a test case, failed in his diagnosis, and did not arrive at a correct conclusion until I called his attention to the peculiar character of the fluid taken from the tumor.

In illustration of these observations I will detail the following cases:

a. Case LXXVI.—*A large fibro-cystic uterine tumor mistaken for ovarian dropsy; tapped; the fluid coagulated on exposure to air; an operation for exploration decided upon; death before the operation was attempted; autopsy.* June 20th, 1855, at the request of Dr. Charles Noble of this city, I visited at his house Mrs. E. A. B., of Chicago, Illinois, aged thirty-six, of good constitution, and in tolerable health. Menstruation began at fourteen years of age. Prior to the appearance of her menses, she suffered from intermittent fever. Up to her twenty-eighth year she was regular; after this period the flow was too frequent, but again became regular. At thirty years of age she was married, had two children, the youngest being three years old. The parturitions and recoveries were favorable, lactation was free, and no menstrual return occurred while nursing. On weaning her children, menstruation again became regular. In June, 1854, the menses did not cease as usual in five days, but continued uninterruptedly for three weeks, and rather profusely, although it did not prostrate her much. After this the intervals between the periods varied, lasting one, two, three, and sometimes four weeks. The flow also continued longer, and was more painful and profuse.

She had suffered considerable pain in the left inguinal region, and subsequently in the epigastrium. There was great difficulty in urination, frequently requiring several efforts before it could be accomplished. She attributed this to a want of power. The urine was scant.

She first noticed an enlargement in the left groin in September, 1853, and her clothes soon became tighter at the waist. She said that she consulted Dr. Hopkins, of Yorkville, Illinois, who pronounced it prolapsus uteri. Early in the winter of 1854, she called on Professor N. S. Davis, of Chicago, who called it an enlargement of the left ovary. He ordered her powders three times a day, which in eight days salivated her, and the swelling diminished, leaving a hardness still in the left side. In two weeks, however, she became as large as before, and afterward continued to increase regularly.

The abdomen of the patient measured forty-six inches round the umbilicus, twenty-two inches from sternum to pubes, and twenty-seven inches between the two superior spinous processes of the ilia. A tumor filled the entire cavity of the abdomen, and pushed up the ensiform cartilage to an angle of forty-five degrees. The enlargement possessed all the characteristic signs of encysted dropsy. The fluctuation was distinct over the whole abdomen, though more easily observed over some parts than others. By percussion the intestines were found crowded mostly to the left of the spine. The pelvis was entirely filled with an elastic tumor, which lay between the rectum and vagina, in Douglas's cul-de-sac. The uterus could not be reached by the finger through the elongated and compressed vagina running up behind the pubes. A short distance below the umbilicus, and to the left of the median line, a solid body could be felt beneath the walls of the abdomen. A sound, passed upward along the track of the vagina in front of the tumor, ascended to this body and its end could be plainly felt through the abdominal wall. This solid body was, therefore, pronounced to be the uterus. The sound in the bladder took a direction toward the right side.

The diagnosis was in favor of ovarian dropsy, but to be decided by tapping

June 22d, 1855, I tapped Mrs. B., selecting a point two inches below the umbilicus, so as to avoid the uterus lying on the left side of the linea alba. A very large trocar was employed. A few drops only of yellowish fluid came away. Supposing that the end of the canula was occluded by something within, I passed the uterine sound through it with the object of displacing it. It met with resistance, which was easily overcome, and the fluid began to escape slowly. But the sound had to be used constantly in every direction in breaking up divisions in the cavity of the tumor in order to keep up the flow of fluid. It at no time flowed freely, requiring over an hour to remove twenty pints. This quantity was removed with great difficulty, and only by constantly breaking up with the sound what appeared to be the cellular structure of the tumor.

The fluid was deeper in color than a straw-yellow, and coagulated firmly by heat, the coagulum being whitish. Very soon after the fluid escaped it gelatinized spontaneously, so that the whole contents of the tub became one dense jelly-like mass, resembling the blood-clot in consistency, but not in color, and consisted, as I then thought, of fibrin. The fluid even gelatinized in the tin cup while filling from the canula. The abdomen could not be emptied; as much appeared to have remained in as was removed. The remaining enlargement fluctuated on percussion as so much jelly would.

Dr. Drysdale examined the fluid and reported as follows:

"Although this specimen was quite fluid when first removed, it coagulated firmly in a few minutes, so that a bottle, which had been filled with it, could be inverted without spilling a drop. By filtration a thin, slightly viscid fluid was obtained, transparent, and of a deep straw or amber color.

"*Chemical examination.*—Alkaline; specific gravity 1020. The fluid became cloudy on the addition of acetic acid. Heat coagulated it. Amount of solid matter, 70 grains; water, 930; fibrin, 6; albumen, 52; salts (chloride of sodium), 9.

"*Microscopic examination.*—In a clear fluid floated a small number of shrunken epithelial cells, some fibre cells, and a few oil globules."

After the tapping, some hardness could be felt over the left side, which was tender on pressure. The same hard mass, the supposed uterus, was still felt to the left of the linea alba. Every other part of the abdomen was soft, elastic, non-resonant on percussion, and fluctuating. The uterus could not be reached, although the pelvis was less crowded than before. The patient bore the tapping well, and was left in charge of Dr. Noble.

June 23d, twelve o'clock M., I visited Mrs. B., and found her perfectly well and very cheerful. She had slept comfortably all night, was entirely free from pain and fever; the pulse, tongue, and skin were in good condition.

At this interview, and, indeed, at every other, she was extremely solicitous to have the tumor removed.

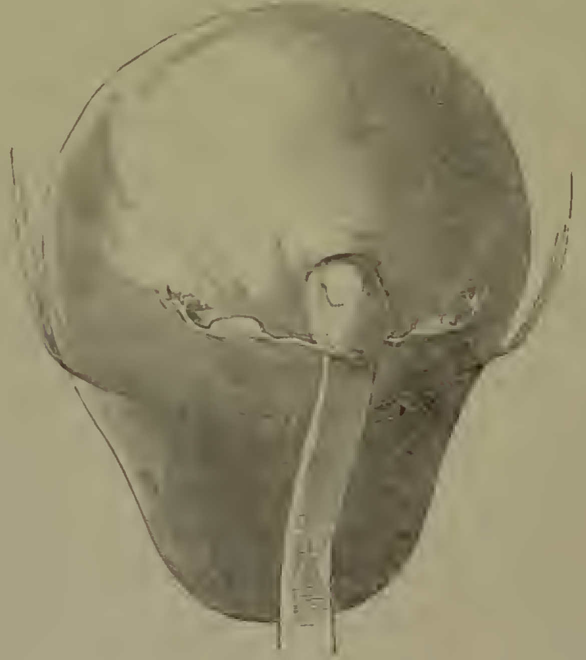
As the microscopical examination of the fluid proved that the tumor was not ovarian, I informed her of this fact, telling her, at the same time, that her case was rare, that I had never met with one like it, that it was too obscure to decide as to its exact character; but that if she was willing to meet all risks, and insisted upon an operation, I would open the abdominal cavity, examine the character and connections of the tumor, and should it be removable without unusual risks to life, that I would extirpate it. She immediately fixed Thursday following, June 28th, for the operation.

It was not my intention to visit the patient on the next day, the 24th, but having occasion to pass her residence about eleven o'clock A.M., I made her an unexpected visit, and was greatly surprised to find her in a dying condition. She was pulseless, the skin was cold and clammy, respiration short and frequent, countenance extremely anxious, and she complained of great distress at the epigastrium. Upon inquiry, I ascertained that shortly after my visit the day before, she ate about one pint of ice-cream, then got from bed, walked to the water-cooler, drank seven tumblers of ice-water, and went directly afterward down-stairs to dinner, and ate heartily of everything on the table. Very soon after she was seized with a severe chill, followed by intense fever, great pain and distress at the epigastrium, accompanied by vomiting, with very quick pulse and intense thirst. These symptoms were treated by Dr. Noble with citrate of potash, chloroform, and sinapisms of mustard. After midnight, however, all febrile symptoms subsided, and she began to sink. Two alvine evacuations, semi-solid and ash-colored, occurred afterward. I immediately ordered stimulants internally, turpentine stupes to the abdomen, and sinapisms to the wrists and ankles, but without benefit, and she died in four hours after my visit.

Twenty-four hours after death Dr. Drysdale made an examination of the body in the presence of Drs. Noble, Euler, and myself. The wound, made by tapping, both through the walls of the abdomen and of the cyst, had healed. The entire abdomen was occupied by a non-adherent, heavy, thick cyst, which also dipped deeply into the pelvis. In front of this cyst could be seen the bladder occupying the right groin; also in front of it, and to the left of the central line, was the elongated vagina reaching upward to the uterus, which was adherent to the tumor at a point about four inches above the pubes. The uterus was slightly enlarged, and doubled upon itself, the angle being at the junction of the cervix with the body. The fundus was inverted, looking downward, so that the fundus and the os lay in apposition, and were flattened by having been compressed between the tumor and the walls of the abdomen. On the fundus was a partially softened fibroid tumor as large as a medium-sized marble. Both ovaries were enlarged to the size of a hen's egg, the left one being engorged with blood. They were also inverted. All these organs were incorporated with the tumor. The tumor seemed to have originated in the posterior wall of the uterus just at the angle of flexure. It had no pedicle. The uterine tissue itself evidently had expanded into the walls of the cyst, and constituted those walls by regular growth or a hypertrophic process. On cutting open the cyst longitudinally, it was found to be filled with organized and partially organized fibrin, and with masses of fibrous tissue; and interspersed through the meshes or interstices were diffused about two gallons of fluid, slightly stained with blood. This was pressed out from the meshes, as fluid is removed from a sponge. The color of the interior of the cyst, or rather of the myomatous masses and the fibrin within it, resembled that of healthy lung. The whole mass was sealed to the brim of the pelvis by normal reflections of the peritoneum, which seemed to have originally lined the cavity of the pelvis, and had subsequently been elevated by the gradual development of the tumor. Below this peritoneal barrier or cul-de-sac the cyst was free from a peritoneal covering, and dipped deeply into the pelvis and occupied its whole cavity. The estimated weight of the tumor was forty pounds.

The intestines were crowded back along the spine, and were empty. The liver, stomach, and diaphragm were pushed up much above their usual position. The liver was pale, quite soft, and broke on the slightest pressure. The gall-bladder was filled to excess, and its duct was surrounded by recent adhesions. The stomach was small, and was lined

Fig. 16.



with numerous large rugosities, particularly toward the pylorus. The left kidney was greatly engorged with blood. The pelvis of the right kidney was largely dilated. The spleen was enlarged. All other organs, including the heart and lungs, were healthy. There was no peritonitis.

In order to convey an idea of the origin, locality, and final development, as well as the appearance and character of this rare tumor, I have had drawn the three figures, 16, 17, and 18. Fig. 16 represents a front view of the tumor with the vagina, and inverted uterus, ovaries, and Fallopian tubes attached to it. Fig. 17 shows a side view of a section of the tumor, uterus, and vagina. It is not intended to represent the internal structure as pathologically correct. Fig. 18 represents the locality of its origin at a point between the roof of the vagina and the reflected peritoneum.

Fig. 17.

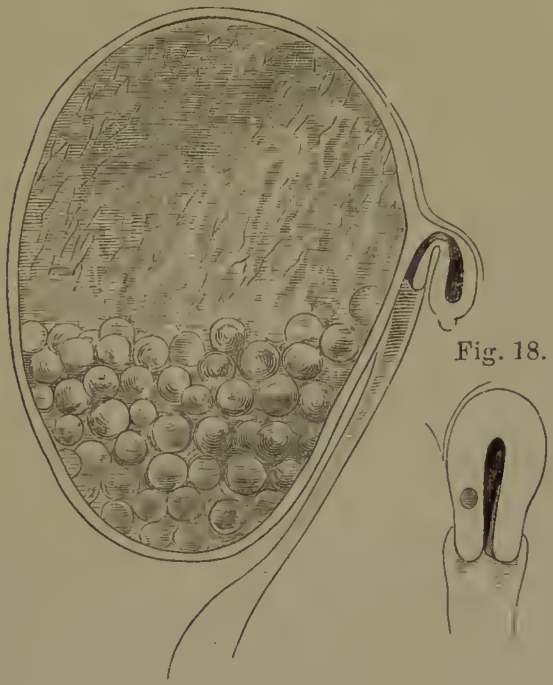


Fig. 18.

The above case offers several points worthy of discussion. In comparing it with the cases under the head of "Uterine Cysts," at page 145, it will be noticed that the original pathological condition was similar, viz., a fibroid tumor. In both forms of disease, the tumors were exterior to the uterus, and in this respect were similar. But in the cases of uterine cyst, the fibroid mass became liquefied, the liquid being contained in a cyst, composed of the tunica propria and of peritoneum, which had previously formed the envelope of the tumor. The fluid, also, of the uterine cysts, which had been removed by tapping, was coagulated by heat, but did not gelatinize on exposure to air. In the above case, however, —the fibro-cystic uterine tumor,—the liquid it contained was not the result of tissue degeneration, but its normal product, being contained in its peculiar cancellated structure, and embraced within a dense cyst wall of uterine tissue. The cyst wall was thick and heavy, and at first sight resembled in texture that of an ovarian tumor. It was covered with a peritoneal coat in the abdomen, but not in the pelvis. The fluid contained in these cells and removed by tapping not only was coagulated by heat, but it gelatinized on exposure to air,—it was in fact true liquor sanguinis,—and separated into clot and serum. The former cases were hard extra-uterine fibroids, whose tissue had softened and liquefied, while the latter was a soft fibroid, or a true cancellated myomatous tumor, with the plasma of the blood occupying its cells.

Before paracentesis, the case was diagnosticated to be an ovarian tumor, but afterward this opinion was abandoned. Still, an operation was decided on, and the day fixed for it. Had the patient lived to have undergone the abdominal section, what would have been the result? Certainly, with my limited experience at that time I should not have attempted its removal, but would have closed the wound without completing it. Since then I have extirpated the same class of tumors with success by enucleating them from their peritoneal coat.

I would here observe, as a matter of great practical importance, that whenever the uterus is elevated into the abdominal region, with an immovable tumor occupying the cavity of the pelvis, it may, as a general rule, be taken for granted that if it be ovarian there will be pelvic adhesions;

and if it be a fibroid tumor, that the pelvic portion of it has been developed downward beneath and exterior to the peritoneal cavity,—thus, by its continued growth, elevating the pelvic organs and pelvic peritoneum to a height proportionate to its development. In the latter case, the practical bearing of this fact is this, that we may reach these tumors through the walls of the vagina and rectum without disturbing the peritoneum.

b. Case LXXVII.—*A large fibro-cystic uterine tumor mistaken for an ovarian tumor; tapped; the fluid coagulated on exposure to air; death from the natural progress of the disease; autopsy.* June 25th, 1856, I was requested by Dr. Wilson Jewell to visit with him in consultation Mrs. H. A. F., who, in his opinion, had an ovarian tumor. She was forty years old, and a widow. Menstruation commenced at the age of fifteen, and after continuing to be regular for some time, it was suspended, while at boarding-school, for six months. During the suspension, she suffered great distress in the head, and became very anæmic. In consequence of her ill health, she was taken home, when the menses returned and continued to be regular. At eighteen years of age she married, had two children, nursed each of them one year, and had free lactation, during which she had irregular menstruation. Her youngest child was seventeen years old, after weaning which she was regular until September, 1855; afterward irregular. The discharge had never been copious nor clotted.

She first noticed the tumor in August, 1854. She said that it made its appearance suddenly, in one night, in the lower part of the abdomen, and almost immediately she became as large as at three or four months' gestation. This occurred without pain, but one week after she was taken with severe pain in the right side, lasting two or three hours. The pain recurred next morning, and then gradually subsided. Two or three weeks after she had a more severe attack in the left side, lasting ten or twelve hours, causing the greatest agony. This was followed by such extreme soreness that she could not move for several days. During all this time she continued to increase in size. Dr. Jewell was summoned in this attack, and he pronounced it ovarian dropsy. After her recovery from this dreadful seizure, she continued to be pretty comfortable the succeeding winter. On the 1st of May, 1855, she was attacked with severe pain in the præcordial region, accompanied by rapid increase in the size of the abdomen, and followed by such great soreness and distress that she was not able to tolerate the weight of her clothing.

Before the appearance of this tumor, she had always been well and fleshy, weighing one hundred and fifty pounds. When I visited her, she was greatly emaciated.

I examined the patient with great care. She was very large, two or three times the size of a woman at full period of pregnancy. The enlargement was uniform, and the xiphoid cartilage was tilted up beyond an angle of forty-five degrees. The whole abdomen was dull on percussion, and had a semi-solid elastic feeling. On striking against the walls of the abdomen, a peculiar vibration or tremulousness was carried across it against the opposing hand, which was difficult to distinguish from fluctuation. It might be described as semi-fluctuation. The pelvis was free of the tumor, the os tincæ was central, the cervix intact, and of natural size. The sound entered only one inch.

The diagnosis was a multilocular ovarian tumor.

I did not see the patient again until January 5th, 1857, when she was placed under my care. She was then enormously enlarged, and was suffering very much in consequence of the distention.

On the 14th, with the hope of affording some relief by tapping, I punctured the tumor with a large trocar through the linea alba a few inches below the umbilicus. Only a few drops of blood escaped.

On the 24th, I again tapped the patient, introducing the trocar several inches above the umbilicus, and to the left of the median line, near the linea semilunaris. On withdrawing the stylet, *some amber-colored fluid* escaped, but very slowly. I passed a uterine sound through the canula into the body of the tumor, and, as in Case LXXVI., broke up the divisions between the supposed cysts, and thus succeeded in increasing the flow. After a long time and with great difficulty, and a constant use of the sound, I accomplished the removal of eight pints of fluid. After withdrawing the canula, the fluid continued to ooze away to the estimated amount of another gallon.

A specimen of the fluid was handed to Dr. Drysdale, who reported as follows: "A fluid rather thicker than water, transparent, and of a deep amber color, containing a large coagulum of fibrin.

"*Chemical examination.*—Alkaline; specific gravity 1020. A boiling heat coagulates it. No change with acetic acid.

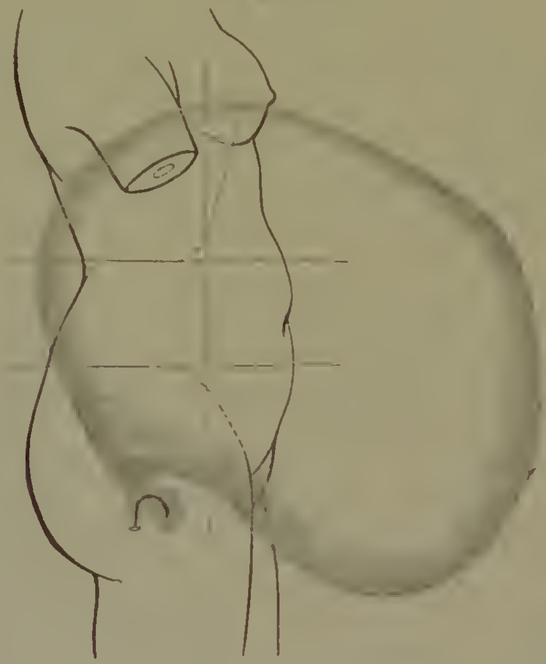
"*Microscopic examination.*—A clear fluid containing no objects."

She was very much relieved by the tapping, although it was followed by considerable soreness, with chill and fever. This gradually subsided, and her health became better than it had been for several months. I followed the operation with calomel, squill, and digitalis, each one grain, three times a day, until gentle ptyalism was induced, after which the abdomen still further diminished in bulk, and she became well enough in the month of March to go down-stairs. As the weather moderated she was able to be out-of-doors, and in May following she left Philadelphia to reside in Camden, New Jersey.

After this I lost sight of the patient until I was notified of her death, October 1st, 1857. The family, knowing that I felt particularly interested in the case, advised me that I might make a post-mortem examination of the body. Accordingly, Dr. Drysdale conducted the examination the same evening in my presence. The size of the abdomen was immense, and the emaciation of the body was extreme. An incision was made from sternum to pubes through the linea alba, and another crosswise, so as to make four flaps. The walls were devoid of adipose deposit, and the cavity of the peritoneum contained no fluid. The whole interior was occupied by an enormous tumor, over which was spread, and greatly stretched, the omentum filled with very large veins, and adherent everywhere to the surface of the mass. Strong bands of adhesions also sealed the tumor, here and there, to the parietes of the abdomen, particularly low down upon the sides. After these adhesions were separated, the mass was lifted from its bed and rolled out, there being no visceral attachments. The tumor was found to have originated from the posterior wall of the uterus at the junction of the cervix with the body, at the point where the peritoneum is reflected from the uterus to form the recto-vaginal cul-de-sac. It was attached to the uterus by a very small membrano-myomatous pedicle, about one and a half inches wide and half an inch thick. The uterus was anteflexed, with a sharp angular flexure, produced no doubt by the superincumbent pressure of the tumor. It was healthy. *Both ovaries were healthy.* All the viscera were found in good condition, excepting the gall-bladder, which, with its ducts, was filled with gall-stones.

The tumor was divided, nearly equally, into two lobes by

Fig. 19.

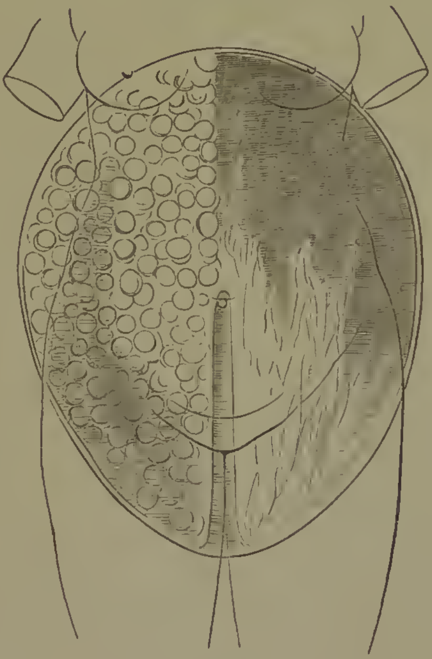


a deep sulcus, corresponding with the linea alba. This longitudinal division extended from the umbilicus downward; above the umbilicus the lobes coalesced into one mass. The right lobe distinctly fluctuated; the left did not, although it was soft and elastic. On cutting into the right lobe, an immense discharge of pus took place, and it collapsed as would a cyst. The left lobe was cut into, and it was found to consist of fibrous tissue. The whole mass weighed between sixty and seventy pounds.

I was informed by the family that for two weeks before death, the patient's suffering was extreme. No doubt inflammation had pervaded the mass and terminated in suppuration of the right lobe.

Figures 19 and 20 represent the case,—one the side view of the patient, the other the front view of the locality and internal appearance of the tumor after opening the abdomen.

Fig. 20.



In reviewing the above case, it will be observed that the sound, so valuable in differential diagnosis, furnished no aid; that it entered only one inch in consequence of the angular flexure of the uterus, and, even had the uterine axis been direct, that it would have entered only its normal distance. Indeed, every indication satisfied me, at that time, that the case was ovarian. Having overlooked the peculiar character of the fluid, *the only positive guide in the case*, I was undeceived by the revelations of the post-mortem examination. However, even with this error of diagnosis, I believe the operation of extirpation might have been performed with a fair expectation of success, and, as the only hope of cure, should have been attempted.

c. Case LXXVIII.—*A large fibro-cystic uterine tumor mistaken for an ovarian tumor; tapped; the fluid coagulated on exposure to air; removed by gastrotomy; died on the fourth day.* June 12th, 1862, I visited Miss M. W., aged forty years. Menstruation commenced at the age of twelve, and was usually regular. The discharge was never profuse nor clotted, and lasted usually five days; the three first days it was abundant, the two last scanty. After 1852 the intervals were three weeks, and the flow was attended with severe pain in the back; but for over two years before I saw her, she was more regular. The two or three last menstruations were at intervals of ten days, and their duration was also ten days.

She first noticed an increase in size about the waist in February, 1860, but no other change until the winter of 1861–62, after which time the abdomen enlarged rapidly. She then resided in Baltimore, and consulted Dr. John Buckler, of that city, who pronounced her disease to be an ovarian tumor, but considered it too early in its development for an operation. After treating her for six weeks, and finding her general health giving way, he sent her to Philadelphia to be placed under the care of Professor Charles D. Meigs. Dr. Meigs treated her for one year for ordinary ascites, but still her health declined. Afterward she was treated by Professor William Pepper, and for a time she improved in strength by the use of tonics. He pronounced the disease ovarian. March 21st, 1862, she was tapped, and only three pints of fluid were removed. It first spurted out for a moment, and then stopped, and afterward oozed out slowly. She described it as a *very thick viscid fluid, of the consistence and color of thin calf's-feet jelly.* Urination was difficult. She had to use the catheter frequently to evacuate the bladder, and always had to elevate the abdomen, when on her back, in order to pass water.

Before the appearance of this tumor, she always enjoyed excellent health, was accustomed to long rides and walks, and had a rosy complexion. When I saw her she was entirely disabled, anæmic, emaciated, and prostrated. There was a hereditary tendency to gout. Formerly, while residing in Virginia, she suffered from intermittent fever, which ceased after 1860.

For four weeks before my visit, the tumor had made very rapid progress, increasing her girth during that time to the extent of six inches. She also suffered the most severe attacks of flatulent pain in the abdomen, so that death was expected. She solicited an operation. The suffering became so great and the danger so imminent that Dr. Pepper withdrew his objections to surgical interference, and advised her to delay it no longer, as he was apprehensive of a fatal termination every day. The patient, therefore, was placed in my charge.

I made a careful examination of the patient on the day of my first visit. The same evening, my brother, Dr. John L. Atlee, who happened to visit Philadelphia, repeated the examination. The abdomen was enormously enlarged, and its walls contained large, dark-colored veins. There was a dull percussion sound everywhere, except over the right hypochondrium. The ensiform cartilage stood out almost horizontally. No solid deposits could be detected anywhere, except a small one below the right hypochondriac region. The abdomen was soft and elastic over its whole extent. Its upper portion and a large part of the left side seemed to be occupied by a large cyst, filled with a fluid which *readily fluctuated.* In the lower portion of the abdomen there appeared to be another large cyst, filled with a thicker fluid, which also *fluctuated*, but less distinctly. Above the pubes, in a central position, a more fleshy-like mass could be detected.

On examining per vaginam, the whole pelvis was found to be occupied by an elastic mass, which pressed tightly against the pelvic bones. The uterus and bladder were both raised up so as to be beyond reach; the locality of the former could not be discovered, and that of the latter was detected high above the pubes by the sound introduced through the urethra. The tumor was so impacted in the pelvis that it was difficult to introduce the index-finger between it and the bony walls. The rectum was also examined, and found to be compressed against the sacrum. No impulse was communicated to the pelvic tumor by percussing the abdomen.

The measurement around the umbilical region was forty-nine inches, from sternum to umbilicus thirteen inches, from sternum to pubes twenty-four inches, and between the two superior spinous processes of the ilia twenty-nine inches.

The diagnosis, both by my brother and myself, was *a multilocular ovarian tumor*. The result proved that we were wrong.

June 18th, 1862, the tumor was removed by gastrotomy. It was distinctly fibroid, semi-solid, cellular, but consisted of no large cysts, as was supposed before the operation. The cells were small and filled with a straw-colored fluid, about fifteen pounds of which were removed. *This fluid coagulated on exposure to air.* The tumor had a sessile attachment to the front of the uterus, which had been pushed up into the lumbar region and was elongated; the pedicle being from two to three inches in diameter, and myomatous. *The ovaries were healthy*, with the exception of a very small cyst developed in the left one. The solid portion of the tumor weighed forty pounds. Death followed the operation on the fourth day.

The above case is one of peculiar interest. It possessed all the characteristic signs of a multilocular ovarian tumor; even the fluid, as represented by the patient, drawn away in March, seemed to confirm the diagnosis. A symptom, rarely absent in ovarian tumors, and as rarely present in fibroid tumors, was well marked in this case, viz., *fluctuation*. In the soft fibroid tumor, *tremulousness*, which closely resembles fluctuation, is often an accompaniment; but *true fluctuation* is so seldom present, that it is never expected. Those distinguished gentlemen,—Dr. Buckler, of Baltimore, Professor Pepper, of Philadelphia, one of the most correct diagnosticians, and Dr. Atlee, of Lancaster, who had been well disciplined in these cases by vast experience, all, with myself, pronounced it, without hesitation, a case of ovarian tumor. And Professor Meigs, a gentleman of world-wide reputation, treated the case as one of ascites one whole year, so strong were the indications of dropsy. The only pathognomonic symptom of value in this case was to be found in the character of the fluid,—*fluid coagulable on exposure to air.*

d. Case LXXIX.—*A large fibro-cystic uterine tumor; correctly diagnosticated at an early period; the diagnosis confirmed by tapping; the fluid coagulated on exposure to air; afterward an eminent ovariotomist mistook it for an ovarian tumor; removed by gastrotomy; recovery.* July 27th, 1867, I was requested by Dr. S. Weir Mitchell to visit in consultation Miss E. E., aged fifty-six. At the age of eighteen she first menstruated, was always regular until 1860, after which she became very irregular. After August, 1866, there was an entire suspension for one year, followed by a red discharge, continuing fourteen days, and a return one month afterward.

She enjoyed pretty good health until 1855, when she became unwell with flatulent colic and copious expectoration. In 1860, the lower portion of the abdomen swelled, accompanied by pain in the right side. Two years after this the pain left the side, and the swelling subsided, but a lump remained. During the summer of 1866 she again enlarged to the same size as before, and she continued to increase afterward.

Dr. Mitchell, who had been attending the case for several months, had diagnosticated it to be a fibroid tumor, and had been treating it persistently with muriate of ammonia. He assured me that the tumor had softened under its influence.

The patient was much larger than a woman at full period. The shape of the abdomen was uniform. There was dullness on percussion everywhere. The abdomen was free from ridges and nodules, perfectly smooth, elastic, tremulous, but not fluctuating. The lower extremities were very much swollen, and the pudendum and vagina so œdematous that the pelvic cavity could not be properly examined. The patient was confined to bed.

My diagnosis agreed with that of Dr. Mitchell. It was decided to test it by means of the trocar.

July 29th, in company with Drs. J. Nicolaysen, of Christiania, Norway, and Mitchell, I passed a large trocar through the linea alba about three inches below the umbilicus. On withdrawing the stylet, a few drops only of a clear yellowish fluid escaped. A sound was now passed through the canula into the substance of the tumor, which was found to be cellular. By perforating the divisions of the cells with the end of the sound, and making strong pressure on the abdominal walls, we succeeded, after a long time, in getting away about sixteen pints of this fluid, stained more or less by blood. Almost immediately after its escape, it *coagulated like blood*, and afterward separated into *clot and serum*. Collected in a tumbler, it gelatinized so as to take the form of the tumbler, and resembled calf's-feet jelly. It also thickened on boiling. A portion of the structure of the tumor was extracted through the canula by a gun-screw hook. The abdomen afterward became much swollen and softer by the operation.

Specimens of the fluid and of the internal structure of the tumor were handed to Dr. W. W. Keen for examination. He reported: "The fluid coagulated in the bottle soon after tapping, but the clot contracted so little that a nozzle of clot was left in the neck of the bottle surrounded by serum. On pouring out the serum, say half an ounce, the clot gradually contracted, so that every few hours one drachm or so could be collected, until after twenty-four hours the bottle (a three-ounce one) was only half full of clot.

"On examination, the *serum* was of an opaline color, looking like hazy healthy urine. Under the microscope it contained scarcely anything,—a few blood corpuscles, fragments of tissue undergoing fatty change, etc.

"The clot was varied in color: in some parts nearly white, in others more tinged with red, in others a bright red.

"By the microscope the fragments of clot were seen to be almost wholly fibrin, with blood corpuscles normal in proportion, etc.

"No cholesterine crystals were seen.

"A portion of the solid parts of the tumor had been removed by a 'harpoon;' but its examination showed nothing but fibrous structure."

The diagnosis of fibroid tumor was, therefore, confirmed.

August 15th I visited the patient again with Dr. Nicolaysen. She had diminished in size since the previous date. The swelling of the limbs and of the pudendum and vagina had disappeared. She could now be up and walk about. The abdomen was softer. Some firm spots could be felt in the left side, and also, by deep pressure, in the upper central portion of the tumor. The pelvis was empty. The os tineæ was elevated almost beyond reach and placed on a line with the left sacro-iliac junction. The sound entered to the distance of five inches, and ascended toward the left and behind the tumor, so that its end could not be felt.

Up to this period the patient had been most solicitous to have an operation attempted for the removal of the tumor, but I refused to entertain the proposition.

September 15th.—She continued to enjoy pretty fair health from the time she was tapped, and had spent two or three weeks in the country. She had improved in strength, flesh, and color. She thought, however, the abdomen had increased in size. It was much softer, and *fluctuating*. There was still more resistance over the left side.

It was just at this time that the distinguished ovariotomist, T. Spencer Wells, Esq., of London, was making his visit to Philadelphia, and I invited him to see the patient. This is the case referred to some pages back. I purposely withheld the history of the case from Mr. Wells until after he had made his diagnosis; and such was the understanding before I introduced him to the patient, as it was intended as a test case. The examination was made, and the decision arrived at, without much hesitation, that it was a case of *ovarian tumor*, and suitable for an operation. He also remarked that the expression of countenance was strongly indicative of ovarian disease. After his diagnosis was made, I put this question to him: "Mr. Wells, have you ever seen fluid drawn from an *ovarian* cyst that *coagulated on exposure to air?*" "No." "That was the case with the fluid drawn from this patient." He immediately asked, "Is it a fibroma?"

I was not unprepared for such a decision by Mr. Wells, and was not at all surprised that even he, with his vast and unequaled experience, and great acumen and skill to aid him, was foiled in making a correct diagnosis, as I had never seen a case better calculated, at that period of its history, to mislead.

January 11th, 1868, in company with Dr. Mitchell, I tapped the patient again, and used the sound through the canula as before; but succeeded, after considerable delay, in getting away only about four pints of fluid.

In both tappings I had used a very large trocar of ordinary length, which penetrated the tumor from two to three inches, and through the canula a Simpson's sound was pushed to its whole length in various directions. The sound merely *perforated* the numerous small cells of the tumor, but the divisions could not be *rent asunder*, so as to convert the cells into one large cavity. Could this be effected, and the cavity injected by some agent, it was thought that more might be accomplished toward the relief of the patient. Dr. Mitchell suggested that the next time she underwent paracentesis, we should substitute for the sound a small knife, with which the interior of the tumor might be cut up, and that afterward it should be injected with acetic acid. To this suggestion I assented, knowing how imperfectly organized these tumors usually are.

April 2d, 1868, a large and very long trocar was passed six or seven inches into the centre of the tumor, and through the canula a long-handled slender knife was employed to cut up the interior structure of the mass. This was followed by the discharge of a reddish fluid to the amount of six or seven pints, a portion of which was ordinary red blood. It coagulated as before. After ceasing to discharge, we injected a syringeful of dilute acetic acid, about double the strength of vinegar. No unpleasant results accompanied or followed the operation.

April 20th.—The wound remained open about one week after the last operation, discharging pretty copiously a clear fluid, the escape of which reduced her size considerably, and softening the abdomen still more, except over the locality of the uterus on the left side. The patient had willingly submitted to these experiments for relief, but she was becoming impatient, and concluded that they could only be palliative. She became exceedingly solicitous that an attempt should be made by gastrotomy for the removal of the tumor.

Before assenting to the patient's demand for an operation, another examination was made. This was facilitated by the reduction in size and solidity of the abdomen. The pelvis was entirely free of both the tumor and uterus. The os tincæ, which was over the left sacro-iliac junction, could barely be reached by the index-finger. The sound entered the uterine cavity five inches, and its end could be felt through the abdominal walls by deep pressure midway between the umbilicus and spine, on the left side, on a level with the umbilicus.

The propriety of attempting an operation was discussed by Dr. Mitchell and myself, after which the following proposition was made to the patient: That an opening through the linea alba would be made large enough to admit the hand into the cavity of the abdomen; and that the tumor would then be carefully examined and the possibility of its removal decided upon. If removable, the tumor would be extirpated. If not, it would be cut into boldly, its whole interior structure disintegrated, or broken up by the hand, so as to disorganize the mass and cause it to degenerate and discharge through an opening left for the purpose in the walls of the abdomen. Should the latter course be adopted, then we would make free use of the valuable antiseptics now known to us to guard the patient against the noxious influence of resulting decomposed matter. At the same time, the dangers of such surgical interference were distinctly placed before the patient and her friends.

Two days after, her sister called upon me to say that the operation was decided on, and that they had selected the 5th of June for that purpose.

The operation was performed. Two tumors were removed; one very large, which originated with a thick pedicle from the posterior portion of the uterus, at a point between the insertion of the vagina and the reflected peritoneum; the other much smaller, which came off from the posterior face of the left broad ligament close to the uterus. Both were fibroid, and their combined weight with fluid contents was about forty pounds. The patient recovered, and up to this time (1872) has enjoyed excellent health.

The tumors were placed in Dr. Keen's possession for examination. He reported as follows:

"Two tumors removed: 1. The smaller one weighed five and a half pounds. This was attached by an inch and a half pedicle to the posterior surface of the left broad ligament, one inch from the uterine border,—non-continuous with the uterus. Fallopian tube perfectly distinct and intact. 'It is divided into two lobes of unequal size.' On opening the lesser lobe, a mass resembling soft cheese was cut into. It peeled away from the walls, leaving them very like the 'pyogenic membrane' of an old abscess. The larger lobe consisted of the same mass in one end, but at the other end cysts were formed looking blue like ovarian cysts, but the fluid presented nothing save blood corpuscles. Even some brownish-yellow masses were nothing but aggregated blood corpuscles. Fatty degeneration was going on in the walls at many points, not diffusively in all the cells, but in local foci,—the beginning of the process of softening.

"2. Larger tumor weighed, freed from fluid, nineteen and three-quarter pounds, and was eighteen inches in diameter. It had, after the operation, a wall and a cavity. The cavity had been made and emptied by the breaking up of the contents and the walls of the separate cysts by Dr. Atlee's hands. The walls on the outside presented various and numerous marked bands of adhesions, and on the inside were exceedingly shreddy, undergoing destruction. At a number of points there were large masses, some as large as an orange, hard and dense. On section they creaked under the knife like leather. They were honey-combed by small cysts varying in size from a pin's head to a hazel-nut,—various centres of fatty degeneration, and softening and liquefaction.

"The contents and the walls presented the same appearances as the other tumor, save that there was more fibrous tissue developed. None of the characteristic fluid of ovarian disease was to be seen."

The above case illustrates very strongly a point in diagnosis to which I am anxious to call the attention of the profession, viz., *the character of the fluid removed by tapping, and the value of this operation as a means of diagnosis.* We have seen that even Mr. Wells, whom we all delight to honor as the highest authority in ovariotomy, was corrected in his diagnosis in this case only by the character of the fluid, so exactly did it resemble, in every other feature, an ovarian tumor. This circumstance, instead of disparaging our great master in England, adds to his character, by proving how closely observant he is to every phase of differential diagnosis, and should warn others, of less experience, not to be too sanguine in expressing an opinion until they have adopted every possible means of examination.

e. Case LXXX.—*A large fibro-cystic uterine tumor mistaken for an ovarian tumor; the diagnosis corrected by tapping; the fluid coagulated on exposure to air.* April 22d, 1863, I received the following note: "Mrs. A. E. S., of Washington City, arrived in Philadelphia this afternoon for the purpose of placing herself under your charge, to be treated for an enlargement of the *right ovary.*" I called the same day to see her. She was forty-two years old. Menstruation commenced at the age of fourteen, had always been regular, not painful nor profuse, and lasted three days. She married at the age of seventeen, had three children, the youngest in 1845. There had been no difficulty in parturition. Lactation was scanty. In 1851 she was treated for granular inflammation of the uterus, after which she always had painful but regular menstruation, with diminished and clotted discharge, lasting two days.

During the summer of 1862 she noticed that she was increasing in size over the whole body, and particularly in the region of the abdomen. The abdominal embonpoint, however, was always in excess. One month before I saw her she was attacked in the night with acute pain in the right groin, which continued all night and next day, and was relieved only by opiates. After this she noticed an enlargement of the right side, but could detect nothing like a tumor. As she continued to get larger afterward, she visited Philadelphia to consult me.

I examined Mrs. S. during this visit. She was a fine, healthy-looking woman, disposed to corpulency, and exhibited no unusual abdominal prominence. When on her back in bed, a merely full abdomen was noticed, with greater fullness in the lower right side than elsewhere. Upon making deep pressure through the thick adipose tissue of the abdominal walls, a tumor could be detected occupying the whole lower right side of the abdomen. It extended above the umbilicus, crossed the linea alba to the left, and dipped into the pelvis. This tumor was elastic, cyst-like, and, so far as could be detected through the fatty walls, semi-fluctuating. Its surface was free from nodules or ridges. It was more or less movable.

A vaginal examination discovered the uterus in the posterior part of the pelvis, small, movable, and admitting the sound to the distance of one and a half inches only. In the right side of the pelvis, and anterior to the uterus, the elastic tumor was felt dipping into the superior strait. With the fingers against the pelvic portion, and the other hand outside against the fundus of the tumor, it could be freely moved between them. The uterus and tumor were also movable independently of each other.

The diagnosis was *ovarian tumor*. At this early stage of the disease, and in the present condition of health, I advised her to let it alone.

The patient returned home, and kept me informed, from time to time, of her condition by letter.

September 3d, 1868, the following intelligent letter was received from A. Y. P. Garnett, M.D., of the City of Washington, D.C.: "I was called to-day to visit professionally a Mrs. S. of this city, who informed me that she had, some two years ago, submitted her case to a full examination by you. I found her affected with great gastric distress, intense thirst, restlessness, and insomnolency. No fever, tongue not indicating by its appearance any inflammatory condition of the gastro-enteric mucous membrane. Associated with the symptoms indicated above was a distended abdomen, uniform, and rounded in its periphery, as if it contained fluid. I was unable, however, to detect even obscure fluctuation after a careful examination in both the erect and recumbent positions. But as the history of the case, as well as its present aspects, afforded no evidence of the existence of a solid tumor, and as there was not to be elicited the tympanitic resonance of gaseous distention, I am strongly inclined to the opinion that there is fluid contained within one or more ovarian sacs. Under this belief I have deemed it best to advise her being placed at once under your care, so that any operation, which you may decide to perform, might not be complicated by the results of antecedent tapping."

Mrs. S. visited Philadelphia again, September 24th, 1868. After she returned home in 1863, she menstruated pretty regularly, except an occasional interval of six or eight weeks. There had been no flooding, but, on the contrary, the discharge was scant. Until April, 1865, she thought there had been no permanent increase in size of the abdomen, although it had frequently varied, sometimes being smaller and sometimes larger. Afterward there was a gradual increase, and at the time Dr. Garnett saw her it had enlarged rapidly. She had suffered very acute pains in the right side, back, and both groins.

Her appearance had greatly changed. From being in full health, she had become much emaciated. The abdomen was very much larger, and exceeded in size a woman at full period of pregnancy with twins, although there was little adipose deposit. It was very prominent, round, and uniform, free from ridges and hard places, and the sulcus had disappeared. The tumor was quite elastic, compressible, and *felt* precisely like a cyst containing fluid, but yet there was *no fluctuation* in any part of the abdomen. *Tremulousness* on percussion existed. The pelvis was comparatively free. The os tincæ was thrown back; no cervix was perceptible; the sound entered the uterus to the distance of nearly three inches, and ascended in a central direction behind the tumor. The uterus seemed to be free from the mass.

After this examination I suspected the correctness of my former diagnosis, and so informed the patient. I proposed tapping, telling her that, although I might fail in getting any fluid, yet it was necessary to puncture the tumor in order to clear up all doubt.

Next day, assisted by my son-in-law, Dr. David Burpee, I passed the large trocar through the linea alba below the umbilicus into the tumor to the depth of three inches. No fluid escaped on withdrawing the stylet. The sound was introduced through the canula and encountered resistance; but this readily gave way, and the end of the sound was made to perforate the interior of the tumor in various directions, after which a clear straw-colored fluid escaped very slowly. On manipulating in this way a considerable time I finally succeeded in drawing off two or three gallons of fluid, stained with blood, which *coagulated on exposure to the air*, just as blood does, and, like it, also separated into clot and serum. In most points the case when first tapped resembled the last one reported. The tumor, however, was softer, the divisions of the cells were not so firm, and the sound met with less resistance. The abdomen after the tapping became much softer, but continued to be quite large.

The diagnosis was now corrected. Without the least doubt, I pronounced it a case of *soft uterine fibroid tumor*.

Dr. Keen reported on the fluid as follows: "The bottle contained fluid which had coagulated, the coagulum having contracted, leaving about one-fourth of an inch of fluid on its margins. The coagulum was of a pink-red color, and on examination by the microscope showed coagulated fibrin, entangling blood corpuscles.

"The fluid, of a pale amber color, contained, by the microscope: 1. Blood corpuscles. 2. Granular matter, some of it probably oil globules. 3. A few larger oil globules. 4. Unrecognizable débris of tissue. 5. A very few cells like pavement epithelium from the tongue, but smaller.

"The clot was of uniform color. No cholesterine was seen, and no compound granular corpuscles."

After having been tapped, the patient returned home, and enjoyed tolerable health for a few months, but the abdomen again becoming more enlarged, she came back to Philadelphia on the 29th of April, 1869, and submitted the second time to paracentesis, and with similar results.

May 11th, 1869, my brother, Dr. John L. Atlee, of Lancaster, being in the city, I invited him to see the case, and requested him to make a diagnosis as he would in any other patient consulting him, without receiving any information from me. He did so, and arrived at the conclusion that it was a multilocular ovarian tumor. On being informed, however, of the peculiar character of the fluid, he corrected his diagnosis.

In reviewing the foregoing cases of fibro-cystic uterine tumors, it must be apparent that I regard paracentesis as the only reliable means in certain cases to be adopted in order to make out a positive diagnosis between these tumors and ovarian cysts. I consider the fluid removed from the fibro-cystic uterine tumor to be blood, *minus* the corpuscles, or true liquor sanguinis, which rapidly coagulates on exposure to the atmosphere, and after a reasonable time separates into fibrin and serum. So far as my experience goes, I have met with no other fluid, removed from the abdominal cavity, that undergoes such changes; nor have I met with any other form of tumor that furnishes such a fluid. It may, therefore, be pronounced not only diagnostic but pathognomonic. It is true that fluids are removed from the general cavity of the abdomen, or from local cysts having an inflammatory origin, in which are formed *fibrinoid* substances. But the entire mass of these fluids does not coagulate on exposure to the air, and these fibrinoid formations usually require several hours for their production, and appear like strings suspended in a large quantity of fluid, and very different from the clot and serum above referred to. It is also in accordance with my experience, that when either of the above fluids is removed by tapping, we must exclude the idea that it comes from an ovarian cyst. In a diagnostic point of view, therefore, the study of the fluids of dropsy is of paramount importance, and I need not apologize for recurring to the matter so frequently.

Before concluding this part of the subject, it may be remarked that multilocular ovarian tumors are just as frequently taken for fibro-cystic tumors of the uterus, as the latter are for the former. Very recently a marked case of the kind came under my care, which previously to tapping was diagnosticated to be fibro-cystic.

f. CASE LXXXI.—*A multilocular ovarian tumor mistaken for a fibro-cystic uterine tumor; the diagnosis corrected by tapping; ovariotomy.* November 17th, 1871, I visited Mrs. B., at Chester, Pennsylvania, in consultation with Dr. W. W. Johnson. She was forty-five years old. Menstruation commenced at the age of fourteen. It was painful for several years, always profuse, sometimes clotted, irregular, and sometimes entirely suspended. She was married at the age of twenty, had one child, now twenty-four years old, and has been a widow for twenty-three years. After childbirth, menstruation was regular, free from pain, but continued to be profuse. For the last nine months she has had menorrhagia.

Last summer she first noticed that her dresses were getting too tight. About the middle of August, her servant being away, she assisted in the ironing, and noticed that when her abdomen came against the table it gave her pain. The soreness afterward extended over the abdomen. In the early part of November she was seized with very acute spasmodic pains, which continued for ten days.

The patient was disposed to corpulency. There was some protuberance of the abdomen, but most of it was owing to the presence of adipose tissue. The percussion sound was resonant over the right side and dull over the left. An elastic tumor could be pretty well defined, occupying the hypogastric, lower portion of the umbilical, and left inguinal and lumbar regions. It felt as if it contained a fluid, but there was no fluctuation. The uterus was enlarged, the os presented toward the hollow of the sacrum.

As my visit and examination were very hurried, I did not make a diagnosis.

January 20th, 1872, I visited the patient again, and made a more careful examination. The percussion sound was now dull over the whole abdomen, except in its upper border. The tumor had increased in size, but not changed in character. It was elastic, but non-fluctuating. No nodules or ridges could be discovered. It was more or less movable. The uterus was in the same position, admitted the sound three and a half inches, which passed up behind the tumor.

When the tumor was moved, it disturbed the sound only in one direction,—upward.

Diagnosis.—Fibro-cystic uterine tumor.

March 6th, 1872, I saw the patient again. After my last visit, there had been a rapid increase of the tumor, and emaciation of the patient. There was semi-fluctuation.

To decide the character of the tumor I tapped her, removing twelve pints of very viscid, ropy fluid, resembling in consistency and color thick, yellowish syrup of gum-arabic, which thickened on boiling.

Diagnosis.—Multilocular ovarian tumor.

Drs. Drysdale and Mears examined the fluid, and pronounced it ovarian.

March 27th, I removed the tumor. It was a multilocular ovarian tumor of the left side. With the exception of one cyst, it was a large semi-solid mass, composed of an immense number of very small cysts, and in texture resembled a fibrocystic uterine tumor.

CHAPTER VIII.

RETROVERSION OF THE UTERUS.

Retroversion of the uterus may be mistaken for an ovarian tumor, particularly when the patient is in a state of pregnancy. The development of an ovarian tumor is generally more gradual, and more free from severe pain, and accompanied by less general and local disturbance, than the occurrence of retroversion of the uterus. The pelvis is also more roomy; the uterus is *in situ*, of the proper size, and movable; and usually there is no difficulty in urination and defecation. In retroversion of the uterus, on the contrary, the suffering sometimes is extreme; the constitutional symptoms are severe; and the pelvis is impacted with a solid, or semi-solid mass, while the os and cervix uteri do not occupy their proper position. When we add to this the difficulty in passing water, the obstruction in defecation, the usual suspension of the menses, and the hypogastric tumor, it would seem that a careful observer could not be mistaken in a case so plain, and yet such errors have occurred in the practice of some most excellent physicians. In all these cases of retroversion, *the vagina is traceable behind and above the symphysis pubis, going up in front of the tumor in the pelvis*, and the os tincæ, if discovered at all, must be found above the pubes. There are, however, rare cases of tumor, an example of which I will give, which strongly resemble this condition of the uterus, and which may mislead the surgeon.

a. Case LXXXII.—*A retroverted pregnant uterus mistaken for an ovarian tumor; gangrene of the bladder; recovery with a vesico-vaginal fistula.* November 16th, 1864, I visited Mrs. F. G., in consultation with Dr. J. S., an excellent German physician. He informed me that he had been in attendance three weeks;

that when he was first called the patient was very much swollen in the lower two-thirds of the abdomen; and that she said she was then three months advanced in pregnancy. On examination, he said he found the uterus so high that he could not reach it; that the pelvis was occupied by a tumor; and that the woman was not pregnant as she had supposed. After having treated the patient for several days without having afforded her any relief, Dr. B. was called into consultation, but with no better result. Dr. S. also informed me that he had used the catheter twice a day; that a great deal of pus had been discharged, with pieces of animal tissue. Some of this same tissue had been discharged just before my visit. It resembled the coats of the bladder, and some pieces were four inches long and two inches wide, yielding a fetid odor. The only treatment pursued was the administration of morphia to alleviate her great suffering.

Dr. S. being a German, and not familiar with the English language, it was equally difficult for him to communicate, and for me to understand, his views of the case. I inferred, however, from what I could gather, that he considered it a case of ovarian tumor.

For the purpose of an examination, I placed the patient on her back across the bed, with the hips drawn well to the edge, and her feet resting on two chairs. On exposing the abdomen to view, there was noticed a protuberance in its central portion, extending from a line just below the umbilicus to the pubes, pyriform in shape, and resembling a moderately distended bladder. The top of this projection was semi-solid for about two inches in diameter, and the whole was dull on percussion. I introduced a uterine sound into the urethra, and it passed up readily so that its end could be felt behind the semi-solid mass. On withdrawing it, it was found to be coated with pus. The catheter was then substituted, and nearly one pint of urine, of an offensive odor, was drawn off. It ran away freely for a moment and then ceased, and the most of it required to be pressed away by the hand over the hypogastric region. By this process the central protuberance was very much diminished. The semi-solid portion seemed to be the thickened anterior wall of the bladder.

I next examined the patient per vaginam, and found the pelvis filled with an elastic body, rounded and smooth, and having no trace of an os tincæ anywhere on its presenting surface. The vaginal cul-de-sac could be traced all round it, except in front under the pubes, where the index-finger was enabled to pass, by strong pressure, between this body and the symphysis pubis; and by reaching up, to its utmost extent, I could detect the posterior lip of a *retroverted pregnant uterus.* Upon questioning the patient particularly with regard to the menstrual periods, I concluded that she was four months advanced in pregnancy.

With considerable difficulty the uterus was again restored to its proper position, and the patient recovered with a vesico-vaginal fistula.

b. CASE LXXXIII.—*A tumor mistaken for a retroverted uterus; several unsuccessful efforts made to restore the supposed uterus to its proper position.* In this case an error was made in the diagnosis just the reverse of the last. It was in the hands of two of our most distinguished physicians, and was a case of uterine tumor mistaken for retroversion of the uterus, simply because the sound was not employed in the examination.

November 7th, 1861, I visited Mrs. J. O., in consultation with Drs. F. and D. She was thirty-five years old, and first menstruated between twelve and thirteen years of age, and was always regular. She was married at the age of eighteen years, had five children, the youngest being about four years old. Menstruation had not been suspended. Her general health had been good.

The case had been diagnosticated as one of retroverted uterus, and as several strong but unsuccessful efforts had been made to restore it to position, my aid was requested. These repeated attempts at reduction had been accompanied with such excessive pain that ether had been provided for inhalation during the expected final operation. Before administering it, however, I made an examination. The vagina and lower portion of the abdomen were extremely sore to the touch, owing to the previous manipulations. The pelvis was occupied by a large, smooth tumor, which was located behind the posterior wall of the vagina in the recto-vaginal cul-de-sac, and the os tineæ was entirely above the symphysis pubis. The position of the tumor and its relation with the os tincæ, so far, were precisely the same as are found in a retroverted pregnant uterus. The tumor, however, was firmer and more resisting, giving to the touch the sensation of a uterine fibroid tumor. By pushing the index-finger high up behind and above the symphysis pubis, along the track of the vagina, the healthy os tincæ could be detected.

The patient was now placed upon her back and the abdomen exposed, and the outlines of a tumor could be distinctly seen and felt extending nearly to the umbilicus, and four or five inches to the right and left of the linea alba. It was hard and painful. There was a dull percussion sound over the whole tumor. No fluctuation could be detected. The introduction of the catheter into the bladder and the evacuation of its contents did not reduce the size of the tumor. A sound was then passed into the os uteri to the distance of nearly six inches, which, *instead of going backward*, readily took a direction *toward the umbilicus* and in a central position. The end of the sound was easily detected at the top of the tumor through the walls of the abdomen below the umbilicus, and *the instrument traversed the entire front of the tumor in following the uterine cavity.*

The diagnosis, as thus made out, was clearly that of an intra-mural fibroid tumor developed in the posterior wall of the uterus, and this opinion was perfectly satisfactory to the other medical gentlemen. The subsequent use of muriate of ammonia, as Dr. F. assured me, afforded very great relief to the patient.

Retroversion, retroflexion, or any other malposition of the uterus, in a non-pregnant or non-hypertrophied condition of the organ, cannot be mistaken for an ovarian tumor except by the most careless observer. Sometimes it may not be easy to decide what is the exact position of the organs in the cavity of the pelvis: whether the uterus is retroverted, retroflexed, has a small fibroid tumor developed in its posterior wall, or a moderately enlarged ovary in the cul-de-sac behind it. In either case, however, the sound will aid the diagnosis.

CHAPTER IX.

RETENTION OF THE MENSTRUAL FLUID.

Retention of the menstrual fluid may occur as the result of imperforate hymen; atresia of the vagina; from occlusion of the os uteri after parturition; or from adhesion of the cervical canal in consequence of disease. In either case, as the menstrual fluid is constantly recurring at regular intervals, a tumor will gradually be developed in the pelvis by the accumulation, and, rising into the abdominal cavity, will assume the character of a cystic tumor. The development usually is slow, but varies in accordance with the amount of the menstrual secretion. The tumor is central, more or less movable, firm, but elastic; and when large, fluctuating, semi-fluctuating, or tremulous on percussion. It resembles a unilocular ovarian cyst filled by a dense fluid, and may be mistaken for it. Certain signs, however, which usually accompany the menstrual tumor, are absent in ovarian cyst. The menstrual discharge does not appear, although the monthly molimen may regularly occur. Epistaxis, hæmoptysis, hæmatemesis, or other form of hemorrhage may recur at these periods as a vicarious discharge. As this state of things progresses, the anxiety of the patient and her friends increases, and, her health becoming impaired, the physician is consulted, who upon examination will be able to recognize the cause.

a. Case LXXXIV.—*Retention of the menstrual fluid, accompanied by repeated floodings and menorrhagia, mistaken for an ovarian cyst; a double uterus,—one portion occluded, the other open; autopsy.* November 18th, 1852, I visited Mrs. A. E. N., in consultation with Drs. Gardener and Warrington. She was thirty-five years old. At the age of fourteen there were signs of menstruation, consisting of a discharge of discolored water, after which there was no return for a year, when the menses came on, and continued to recur regularly for one year, and again stopped for six months. In this irregular way they continued until she was eighteen years old, yet she enjoyed comparatively good health, excepting that she suffered great pain in the back and limbs, with stiffness, at every monthly period. From the age of eighteen to that of twenty-two, she was regular, although rather too frequent. Her health now declined, and the pains and stiffness increased. After taking an overdose of Thomsonian medicine, she was awakened at night with severe bearing-down pains. To this medicine she attributes the cause of her disease. From that time she was attacked with severe expulsive pains for one week before every menstrual period, and these pains became more and more aggravated up to the period of marriage and subsequent pregnancy. She was married at thirty years of age, became pregnant five or six months after, and went to her full period. During the first three months of gestation she suffered dreadfully, being scarcely able to walk, and enduring the most distressing bearing-down pains; but afterward she become very well, and continued so to the end of the period. The parturition was extremely tedious and difficult, and delivery was only accomplished by embryotomy under the management of Drs. Gardener, Warrington, and Professor Hodge. After this, for two years she was quite lame in the left leg, and from which lameness she had never entirely recovered. Over two years expired before she had a return of menstruation. In May, 1849, she had a severe attack of dysentery, followed by remittent and intermittent fever, which confined her to bed all summer. It was then that she first noticed a tumor above the pubes, and in two weeks it assumed the size of her double fist. At the same time, an occasional discharge of clear water, amounting sometimes to half a pint, escaped from the vagina, and which still continued to recur. In February, 1850, she had another attack, accompanied by severe expulsive pains, continuing five or six weeks, and terminating in excessive flooding, from which she recovered. Five weeks afterward another flooding occurred, and her life was despaired of. She rallied, however, and improved for two months, and again she flooded, but not so copiously. On the 9th of August she was greatly prostrated by hemorrhage, from which she had scarcely recovered by the latter part of October, when it returned with severe labor-pain. After coming out of this attack, she kept about until August 9th, 1851, when there was another violent hemorrhage, followed by a discharge of very offensive watery fluid, which continued to flow copiously for eight weeks. She then got about again, remaining better up to the time of my visit, but still annoyed with a menorrhagic discharge.

For three or four years past the act of defecation was accompanied by a sense of obstruction, as if a lump was pressing against the rectum. The fæces were of small size, and when indurated were very difficult to expel. During the same time there was also great obstruction to the passage of urine, requiring the use of the catheter, unless the tumor in the vagina was elevated from the neck of the bladder.

After having received this history from the patient and her physician, I examined her in a recumbent posture on her back. The abdomen was remarkably prominent, so as to resemble, in some degree, a pyramid, the umbilicus being the top. It was quite tense, and its walls could not be lifted from the tumor within. The apex of the tumor seemed to be constituted of a cyst five or six inches in diameter, and this was superimposed upon a much larger cyst, which formed the great body of the tumor, and extended upward to the ribs and sternum, laterally to the lumbar regions, and downward to the pubes. Between the umbilicus and pubes there was a collection of fluid, which, from its superficial fluctuation, was supposed to occupy the peritoneal cavity anterior to the wall of the large cyst. Fluctuation was discovered in both cysts.

The pelvis was completely filled with an elastic tumor, which was wedged into it tightly and immovably, and was evidently adherent, as strong bands of adhesions could be felt on its posterior border. On pushing the index-finger up between the tumor and the pelvic walls, it was arrested by a sulcus, or cul-de-sac, all around, except near the left sacro-iliac junction, at which point the vagina appeared to ascend. The uterus was not in the cavity of the pelvis. It could not be reached by the finger. The sound could be passed up along the track of the vagina to the distance of four and a half inches beyond the highest point of the finger, causing a discharge of blood. By percussing the abdomen, fluctuation could be felt in the pelvic tumor, showing that the latter was a portion of the large abdominal cyst. The sound, introduced into the bladder, inclined toward the right, and its end could be felt in the right groin. The only resonant percussion sounds were over the left lumbar region, and slightly over the right side of the spine. Position did not alter the shape of the abdomen, or the points of resonance.

The tumor was readily felt through the rectum. It descended so low into the pelvis, that it could be seen by separating the labia pudendi.

The patient was small, and small waisted. Yet she measured round the umbilicus thirty-six inches; from sternum to pubes, fifteen inches; and between the two superior spinous processes of the ilia, seventeen inches.

This case, in several important features, bore so striking a resemblance to one of ovarian tumor, which I had extirpated a few months before, that Dr. Gardener, who was also the physician in the case, and myself both diagnosticated it to be an ovarian cyst. The question, however, was to be decided by tapping.

We saw the patient again on November 24th. After our former visit she had another attack of flooding, followed by considerable menorrhagia. Having decided to tap the large cyst through the vagina, I passed the large trocar through its thick wall. This required considerable force. At first I supposed that no fluid would flow; but presently a very thick semi-fluid substance began to escape slowly from the canula. It ran like thick sugar-house molasses on a cold day, and resembled it both in consistence and color, bordering, however, more on the deep chocolate. About seven pints escaped. It was so thick that, notwithstanding the canula was very large, and the discharge was aided by pressure, it required nearly two hours for it to escape. It was quite ropy, and it hardened on boiling.

The abdomen diminished considerably in size, and the tapping proved that the pelvic tumor was merely a projection of the large abdominal cyst. The superimposed small cyst in the umbilical region and the fluid accumulated in the hypogastric region were plainly evident, and did not seem to have any communication with the cyst just tapped. The canula was now pushed entirely within the vulva and allowed to remain, and the fluid was still flowing when we left the patient. The operation was borne well.

The next day I saw her with Dr. Gardener. About two pints more of the same kind of fluid had escaped, and she had passed a comfortable night. I now examined her again. The sound was passed through the canula into the cyst and its whole interior was examined, the end of the sound being felt through the abdominal walls externally in all directions. I then withdrew the canula, and again made a vaginal examination, but could detect nothing that could be identified as the uterus. In pushing the finger high up so as to reach above the pubes, its point entered into a sulcus about half an inch deep. This was felt also previously to the tapping. It had slightly the feel of the os tincæ, its anterior lip being normal, and the posterior being expanded into the pelvic cyst. The sound, however, could not be made to enter it. The vagina could be traced going up to the left of this sulcus, and the sound could be carried along it for two and a half inches.

For several days after the tapping, about one pint a day of this peculiar fluid escaped through the opening made with the trocar, but which gradually diminished and ceased altogether. During this period a singular condition was noticed in connection with the small superficial cyst at the umbilicus: upon manipulating this cyst it would contract and become hard, resembling, in this respect, the contractile efforts of a recently-emptied uterus. After the tapping it had also become permanently smaller, and more round, proving that there must have been a communication with the main cyst, or an outlet elsewhere. The constant tendency to contract on handling convinced us that the body of the uterus itself constituted this cyst. There had been no hemorrhage after the paracentesis.

The diagnosis of ovarian tumor was abandoned immediately after seeing the fluid, which, it was evident, consisted of long-accumulated menses. But how it had collected and been imprisoned in such large quantity in a cyst apparently distinct from the uterus, and how frequent floodings and menorrhagia could occur at the same time from the cavity of the uterus, were questions quite inexplicable, and required more time to determine.

The patient's health continued to improve until the 6th of December, when she took a chill, which proved to be the precursor of an attack of erysipelas in the face. This was followed by severe stomatitis, which pervaded the whole alimentary canal, causing uncontrollable diarrhœa, from which she sank and died on the 16th.

Fortunately, an opportunity was afforded for making a post-mortem examination, which enabled us to explain the conditions of this peculiar case. The viscera generally were healthy. The anterior small cyst was found to consist of the uterus, flattened and enlarged. The large deep-seated cyst also consisted of true uterine tissue, and was intimately incorporated with the uterus proper. It was collapsed, reduced in size, and firmly secured to the pelvis. Both ovaries were free and distinct from the mass, the left one unhealthy and slightly enlarged, the right one healthy.

On making a careful examination of the specimen, the conclusion arrived at was that it was a double uterus, with one cervix,—the body of one uterus situated anterior to the body of the other,—that the anterior body had a communication with the cervix and vagina, thus explaining the occurrence of menstruation, menorrhagia, and flooding; that the posterior body was at that time a closed sac, having no outlet, owing to which the large accumulation of the menstrual fluid was imprisoned, and in consequence an immense cyst formed.

As the tumor, in this rare case, was not noticed until after the birth of the child, and as the parturition was protracted and difficult, the great probability is that gestation occurred in the posterior uterine cavity, and that the necessary violence resulting during delivery induced adhesive inflammation in the posterior cervical canal, and sealed it up completely, while the fundus, with its secreting membrane, remained in a state of functional integrity.

Judging from the appearance of the uterus proper, there must have been a bifurcation at or about the middle of the organ, with a septum dividing the two cavities, and supplied with the cervix in common. The anterior wall of the cervix and the anterior body were intact, while the posterior wall of the cervix and the posterior body were expanded into one large cyst. (See Figures 21 and 22.)

Fig. 22.

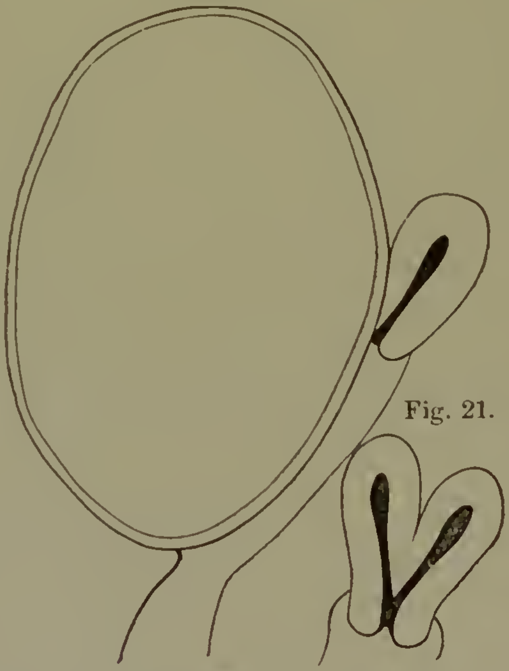


Fig. 21.

b. Case LXXXV.—*Retention of the menstrual fluid mistaken for ovarian dropsy.* July 15th, 1858, I was consulted by Mrs. C. C., of Philadelphia, who was supposed to be afflicted with an ovarian tumor. She was thirty-nine years old; first menstruated at the age of fourteen, and had always been remarkably regular. The menses had always been painful and profuse. She married at the age of nineteen, and at the age of thirty-four, after a difficult labor lasting three days, she was delivered by the forceps of a female child, which died in the birth. Puerperal fever followed, with an entire absence of the lochial discharge; and from that time no sign of menstruation had occurred. About one year afterward an attempt was made to open the womb, but without success, subjecting her to great pain. She then gave up all treatment and all hope, suffered dreadfully, and death was looked for. She, however, gradually improved, and for seven weeks before I saw her she had been under treatment by cauterization of the uterus without any good results.

There was considerable fullness of the abdomen. Percussion returned a dull sound from the umbilicus down to the pubes. A round, elastic tumor could be felt occupying this non-resonant region. The vagina was shortened, and the cervix uteri expanded and elastic, and crowded into the pelvis. The os tincæ was thrown forward, and its lower lip was stretched laterally and overlapped the upper. It was totally and firmly occluded, and resisted the introduction of the smallest sound.

Diagnosis.—Occlusion of the os uteri, retention of the menses, and accumulation since the time of parturition.

The case subsequently was properly treated by incising the os and cervix uteri, and allowing the molasses-like contents to escape. The tumor disappeared, menstruation was restored, and the patient recovered.

CHAPTER X.

DROPSY OF THE AMNION.

Dropsy of the uterus is mentioned as one of the diseases which resembles ovarian tumor, but my observation leads me to regard it as much less frequent than dropsy of the amnion, which is rare. Hydrometra more nearly resembles retention of the menses, being more gradual in its development and more confined in extent than dropsy of the amnion. In either case, the vagina is intact, and the cervix is expanded and elastic. The uterus cannot be isolated from the tumor, as in ovarian dropsy. Motion communicated to the tumor in the abdomen correspondingly affects the cervix uteri in the pelvis. The menses are suspended. In both the sound will reveal the true character of the case. Its employment will be safe and proper in cases of hydrometra, but in dropsy of the amnion it might arrest the progress of gestation. In extreme cases of dropsy of the amnion the os uteri is open and ring-like; and the accumulation is usually so rapid, and the distention so great, that the uterine fibre is made to yield to its utmost capacity, until muscular contraction is stimulated, when the membranes rupture with a gush of water, and premature delivery results, to the great relief and cure of the patient. In pure hydrometra the uterus sometimes acts in the same way, contracting and throwing off its contents in the form of a watery discharge, which reaccumulates and again is discharged, and this, unlike the single discharge of the liquor amnii, is frequently repeated. In this respect—the sudden and repeated discharge—hydrometra may resemble certain forms of encysted dropsy, but when such is the case in the latter, menstruation is not usually interrupted as it is in the former. It is worthy of observation that, according to my own experience, as a general rule, large accumulations of the liquor amnii are most apt to be associated with twins.

a. Case LXXXVI.—*Dropsy of the amnion suddenly supervening, with miscarriage of twins at the fifth month.* December 9th, 1850, I was requested to visit Mrs. C. She had menstruated regularly on the 15th of July, 1849, continuing about one week. There was no return of the menses afterward. Until the 15th of November the abdomen continued to remain flat, after which it began to enlarge, and so rapidly that at the time I saw her, only twenty-four days after the date last mentioned, she was very much larger than a woman at full period of pregnancy. The shape of the abdomen differed from that of pregnancy. It was globular, and the tumor completely filled the whole cavity of the abdomen, elevating the cartilages of the ribs and xiphoid cartilage. The shape of the abdomen was not changed by varying the position of the body. There was no resonance on percussion, except in the lumbar regions, while fluctuation was distinct throughout. The pelvis was pretty well filled with an elastic mass; the os tincæ was thrown far back, and open so as to admit the index-finger readily. It was smooth, tense, and ring-like; and the finger could be passed round between it and an elastic body within, which resembled the ordinary membranes rendered tense by an expulsive pain during parturition. The cervix was distended to its utmost capacity, and the elastic fluctuating tumor, filling both pelvis and abdomen, appeared to consist of the expanded uterus.

Six days before my visit she began to complain of great distress in the epigastric region, accompanied by the sensation of a tumor pressing against the stomach. Her waist was so large that her clothing could not be made to meet by several inches.

December 11th, pain, resembling that of labor, came on. The os tincæ was expanded to the size of a silver dollar, and continued to dilate with pain. I examined the patient in the upright position by ballottement, and a solid body, like a fœtus, could be felt impinging against the distended membranes. About six o'clock P.M. the membranes broke with a gush of water, estimated at three gallons, flooding and saturating all the bedclothes, and running over the floor, besides filling the largest-sized chamber utensil. This was soon followed by the discharge of twins of five months' gestation, and an ordinary-sized placenta. Both children gasped a few times. Their limbs were ecchymosed.

b. CASE LXXXVII.—*Dropsy of the amnion, suddenly supervening, with miscarriage of quadruplets at the seventh month.* In the early part of February, 1852, I was requested to visit Mrs. G. B. She was the mother of seven children, at separate births. Her last regular menstruation occurred July 23d, 1851. Until the middle of January, 1852, she had progressed favorably. After that she began to enlarge rapidly, and when I saw her she was in great distress, and scarcely capable of breathing. She was short in stature, but her body and limbs were immense. Fluctuation was distinct over the whole abdomen. The pudendum and lower extremities were so tumefied by œdema that an examination per vaginam was out of the question. The percussion sounds were all dull.

Diagnosis.—Pregnancy, complicated with ascites.

Active diuretics were ordered, which were followed by a diminution of the œdematous swelling of the extremities, but the size of the abdomen was not affected.

February 18th, I was summoned to the patient, who was taken in labor, but before my arrival a child was born, accompanied by an immense gush of the liquor amnii. On examining the patient I still found the size of the abdomen enormous. As the placenta had not come away, I took hold of the cord, and carrying my finger along it found the pelvis empty, and the cord reaching high into the uterus beyond the point of the finger. No body was presenting in the superior strait within reach. Uterine action remaining suspended for two or three hours, ergot was administered, and was soon followed by pain. Instead of the placenta, another bag of waters presented, which gave exit to a very copious discharge, and another child was born. This was repeated until four children were born, each one being preceded by an immense discharge of fluid. The membranes of the three last children were so strong that they could not be ruptured in the ordinary way, but required to be punctured. The enlargement of the abdomen now disappeared. The children were all living, healthy, and well developed for the period of gestation—seven months.

c. CASE LXXXVIII.—*Dropsy of the amnion mistaken for abdominal dropsy; thirty-two pints of fluid drawn off by tapping; reaccumulation of the fluid; miscarriage of twins at six months.* This case, although not occurring under my own eye, was one of consultation with James W. Kerr, M.D., of York, Pennsylvania, who sought my opinion in reference to it. It is one of too great interest to remain unrecorded, because it shows how the best men in the profession may sometimes be deceived. In the report of it I prefer to use his own words:

"September 23d, 1861, I met my friend, Dr. McClellan, in consultation, to see Mrs. B., a married woman, aged thirty-five. The history of the case is the following: She believed that she was five months gone in pregnancy. She enjoyed good health until about three weeks ago, and did not feel any difference in her condition from that experienced in former gestations. But during the last few weeks she experienced, at times, great difficulty in urinating, and it was to relieve this that she had sent for her physician. When he saw her, she complained of very great pain over the pubes, with a continual, but ineffectual desire to evacuate the bladder. After the use of an opiate and warm fomentations without relief, the bladder was emptied with the catheter. The urine was very dark-colored, and she was left quite easy. For several days the same trouble occurred, though not to the same extent. From her appearance, which was that of a woman at the full period, he suggested that she might be mistaken in her calculation, and that she was much nearer her confinement than she supposed; but she was positive there could be no mistake, and that the enlargement of the abdomen had come on within the past three or four weeks. This led him to suspect some other condition than pregnancy. After a careful examination he thought that he detected fluctuation; and from the uniform distention of the abdomen, he pronounced it *dropsy of the abdomen*, although he could not satisfactorily account for such a condition unaccompanied by any symptoms of disease. The pain for which she had applied to him was local, and evidently the result of pressure upon the bladder, there being no pain upon pressure except when the bladder was distended. The distention of the abdomen increased very rapidly, so that in a few days after he saw her first she was unable to lie down, her breathing became very difficult, her countenance assumed a haggard, anxious expression, and she seemed to be sinking very fast. As the case was a novel and interesting one, I was called in. I coincided in the view the doctor had taken of the case, and we concluded that tapping was the only remedy that promised relief. On the 2d of October we introduced the trocar, and drew off thirty-two pints of fluid. As the fluid discharged, the form of the gravid uterus developed itself, and proved that the woman was correct as to her time. In a few days after the tapping it became evident that the fluid was again accumulating rapidly, and it became a question whether the operation should not be repeated, as all the symptoms of oppressed breathing and anxiety, which had entirely subsided after the evacuation of the fluid, were returning with the increase of the fluid. On the 16th of October the doctor was summoned in great haste, and found that labor-pains had come on. Upon making an examination, he found the os uteri fully distended, and a sac of water protruding. A slight pressure upon it ruptured it, and this was followed by a perfect gush of water, which discharged for several minutes, saturating the bedclothes and running over the floor. So great was the discharge that he is satisfied some gallons must have escaped. Simultaneously with the gush of water came a *fœtus*, as though it had been washed away by the force of the escaping fluid, and a *second* one followed in a few minutes. They were both small, and evidently not over six months. The woman recovered rapidly from her confinement, and, during the year and a half which has since elapsed, has been in perfect health."

The fluid drawn off by tapping in the above interesting case was evidently the liquor amnii; and, in performing the operation, the uterine wall must have been perforated by the trocar. In this form of dropsy, therefore, it must be plain how closely it resembles encysted or ovarian dropsy in its physical characteristics. In being rapid in its development, also, it is not unlike certain acute cases of ovarian tumor. It differs, however, from that by uniformly suspending menstruation, and by altering the shape of the cervix uteri in proportion to its development, rapidly expanding and obliterating it, which is readily ascertained by the touch. This state of things may be confounded with pregnancy complicated by either ovarian tumor or ascites; but when the fluid is not contained within the uterine cavity, there is no such rapid expansion of the cervix, the correspondence between the period of utero-gestation and the development and distention of the uterus is normal, the full period of pregnancy is usually accomplished, and an examination per vaginam, which should always be made, will enable the surgeon-accoucheur to arrive at a correct diagnosis.

Should such a case be unfortunately tapped, as was done in Case LXXXVIII., the error would be pointed out by the physical, chemical, and microscopical characters of the fluid. These are stated by Dr. Drysdale in the report of Case LX., Chapter V., p. 213. As a further illustration of the character of amniotic fluid, a specimen was collected at my request by Dr. J. Ewing Mears, and examined by him. He reported as follows:

"Examination of a specimen of amniotic fluid, September 5th, 1871.

"The specimen, eight ounces in quantity, was obtained by introducing a small trocar and canula into the sac of the amnion of a woman at full term of gestation, and during the act of parturition. It was drawn so as to avoid any admixture of blood or vaginal secretions. Some hours after its removal, a whitish deposit formed in the fluid, settling to the bottom.

"The color of the fluid was milky. When the deposit was fully formed, the supernatant fluid was of a pale straw color.

"It was not very consistent, dropping freely from the tube.

"The quantity of albumen contained was not more than ten to twelve per cent. The specific gravity was 1009.

"On submitting a portion to microscopic examination, it was found to contain large numbers of epithelial cells, which had undergone fatty degeneration, and free oil globules. Examination of the deposit showed it to consist entirely of oil globules.

"I was not able to detect any casts of the uriniferous tubes, which Dr. Beale has found in amniotic fluid, and which would indicate that the urinary secretion was mixed with the liquor amnii. The oil globules were evidently derived from the vernix caseosa which covers the skin of the fœtus in the latter months of pregnancy."

CHAPTER XI.

ENLARGEMENT OF THE ABDOMINAL VISCERA.

Enlargements of the stomach, liver, spleen, kidney, and tumors originating in the omentum or mesentery, may be mistaken for tumors of the ovary. If the surgeon is consulted in the early period of the disease, he can often determine the character of the tumor by its locality, particularly if it occupies a *fixed* position in the superior part of the abdominal cavity. Tumors of the liver, spleen, pancreas, stomach, and upper portion of the omentum would, in their early stage, be developed in the superior region of the abdominal cavity, and a dull sound would be elicited by percussion over one or both of the hypochondria, the epigastrium, or upper part of the umbilical region, and a resonant sound over the lower portion of the abdomen. If, however, the tumor had become so large, before the patient was submitted to an examination, as to encroach upon the pelvis, and force the intestines into such a position as to remove the resonant sound on percussion, the difficulty of making a diagnosis would be very much increased. In cases of tumors of the kidney, percussion will elicit a resonant sound both above and below. The tumor may be *fixed* in the lumbar region, or it may be pushed, if in the form of a *floating* kidney, in various directions from its normal locality. As the renal tumor increases in size, the difficulty of diagnosis increases, particularly when it is cystic in character, or surrounded by ascitic fluid. This last remark will also apply to enlargement of the other organs named. Important lesions of the abdominal viscera above enumerated do not usually exist without characteristic constitutional symptoms and functional derangements, which are generally absent in uncomplicated ovarian disease.

The differential diagnosis between these enlargements and ovarian tumors may be stated, in a general way, as follows: the former originate in the superior portion of the abdomen, develop downward, and the resonance on percussion is below; the latter originate in the lower part of the abdomen, develop upward, and the resonance on percussion is above.

Sometimes there may be a floating liver, spleen, or kidney, which may be capable of being moved freely. Omental tumors may also occupy different regions of the abdominal cavity. Uterine and ovarian tumors, including the dermoid, with long pedicles, may, when comparatively small, also rise up into the cavity of the abdomen, and be freely movable. The diagnosis may, in such cases, be made by placing a finger upon the os uteri, or introducing a sound into its cavity, while an assistant elevates the tumor to its greatest extent. Should the uterus be drawn up by this manipulation, the inference would be that the tumor was in some way connected with it.

a. Case LXXXIX.—*Dilatation of the stomach, resembling a unilocular ovarian tumor.* This case was one of such very great interest, and so exceedingly rare, that I report it here, although it occurred in the male subject. The same condition may occur in the female. T. J. N., aged fifty-four years, consulted me in June, 1859, for gastric disorder. As the summer advanced, the symptoms became more and more aggravated, assuming those of organic disease of the stomach,—such as great distress in the epigastrium, frequent vomiting, gradual emaciation, failure of strength, and general cachexia,—ending in diarrhœa about two weeks before his death.

The patient could not occupy the recumbent posture, but kept himself always either in a semi-recumbent or sitting position. The abdomen had a very peculiar shape. The epigastrium was depressed, and all below that region was tumefied. The tumefaction was soft, semi-fluctuating, and dull on percussion, while above it, over the epigastrium, there was resonance. Supposing that this intumescence might depend upon an accumulation of fæces in the intestines, I examined him per rectum and found it filled. This examination confirmed my opinion, and I endeavored to cleanse out the bowels with appropriate laxatives and enemata. This treatment did not cause the tumor to disappear, and his symptoms remained unchanged. He continued to sink, and his mind became impaired.

During my attendance Professor Samuel Jackson visited the case in consultation, and was also of the opinion that the accumulation in the bowels produced the abdominal tumor.

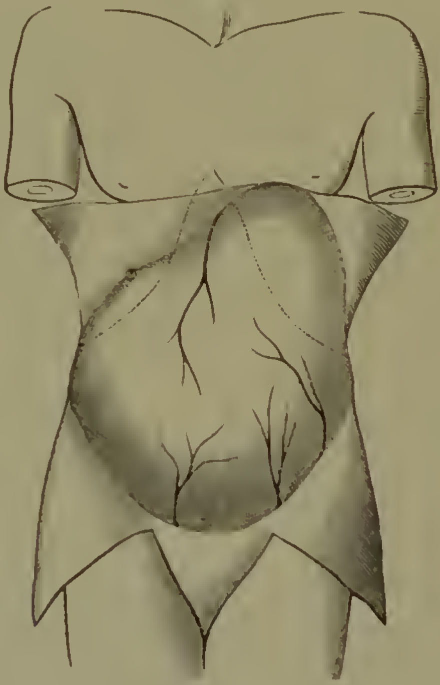
The patient died, August 29th, 1859, and an autopsy was made by Dr. Drysdale thirty-three hours after.

The body was very much emaciated. On making a crucial incision through the abdominal wall, and reflecting the flaps, I was surprised to find the cavity of the abdomen occupied by an immense cyst. Had the patient been a female, I should at once have pronounced it an ovarian cyst, on account of its appearance. After a more extended examination it was found to be the stomach immensely dilated, filling up the entire cavity, and covering over, like an apron, all the other abdominal organs. It projected from beneath the ribs above, and extended into the pelvis below, occupying both sides. On making pressure over the epigastrium, so as to force the contents of the stomach downward, the exact form of the tumor, as it existed before death, was reproduced,—proving that it was the stomach, and not the bowels, that formed the enlargement. On tracing the stomach upward, it was found to extend up under the ribs to a point on a level with the left nipple. The pylorus was located under the eighth rib on the right side. The liver was pushed up, and all the rest of the viscera were posterior to the stomach. The pylorus was slightly thickened and of scirrhous hardness; and adjacent to it was an indurated gland, as large as an almond.

The stomach was opened, and found to contain three or four quarts of very dark, almost ink-colored fluid. The mucous membrane appeared ecchymosed, and dotted over with innumerable red blotches. It was quite fragile and easily removed. The pyloric orifice was so contracted as to admit the passage of a sound not thicker than a crow-quill, and the tissue was infiltrated with scirrhous deposits. The veins of the stomach were greatly engorged. The intestines were filled with the same kind of fluid as that found in the stomach, and their veins and those of the mesentery were also much engorged. The sigmoid flexure was contracted and empty.

Figure 23 represents the appearance of the dilated stomach before its removal.

Fig. 23.



Such a case of extraordinary dilatation of the stomach, occurring in the female, might lead to very grave errors in diagnosis. Under certain circumstances it might assume the physical conditions either of ascites or ovarian dropsy. When occupied by both fluid and gaseous contents, the symptoms peculiar to ascites would prevail, such as fluctuation, and the resonant percussion sound at the most elevated points of the abdomen. When filled with fluid alone, it would resemble cystic or ovarian dropsy, inasmuch as there would be fluctuation, and dullness on percussion over the whole abdomen in all positions of the body. If mistaken for ascites or ovarian dropsy, paracentesis would be likely to prove a more fatal operation than gastrotomy, as the surgeon would perforate the stomach in the one case, while in the other he would have an opportunity of discovering his error. In view of the occurrence of an accident of this kind, I need not apologize for recording the above case in illustration of a point in differential diagnosis.

b. Case XC.—*Enlargement of the spleen, with ascites, mistaken for ovarian dropsy; tapped six times; exploratory operation; death on the third day.* The following is a copy of a letter dated April 5th, 1865, received from an excellent physician in the western part of Pennsylvania: "I have a patient whom I believe to be suffering from an ovarian tumor. The patient is a widow forty-five years old. My attention was called to her case about four months ago. From what I learn, the commencement of the disease dates back some two years. I have tapped her three times, taking at each operation over two gallons of yellowish transparent fluid. The patient is confined to her bed most of the time."

As afterward requested, I visited Mrs. R. W. J., May 10th, 1865. She had been tapped six times,—the last tapping having been performed on the 5th of May; and when I saw her the accumulation was excessive. She was the mother of seven children, the youngest being six years old. The patient was emaciated, broken down, and very feeble.

On examination I found a deeply-seated tumor occupying the left hypochondrium, and extending down the left side. It was fixed firmly with its base to the hypochondriac region, while its edge could be felt floating in a fluid toward the central portion of the abdomen. There was dullness on percussion over the left side, except in the lower part of the left inguinal region, which returned a resonant sound when the patient was placed upon the right side. When on the back, the epigastric and umbilical regions were resonant, and other portions dull; but when on the left side, the right side became resonant, and the front of the abdomen dull. The pelvis was occupied by a very hard scirrhoid deposit, particularly in the recto-vaginal cul-de-sac. The cervix of the uterus was hard and nodulated, and the os uneven. The sound entered two and a half inches, causing considerable pain. The uterus was immovable.

I informed the medical gentlemen, who had assembled to assist in the operation, that the disease was not ovarian; that I believed the tumor to be an enlarged spleen; that the fluid occupied the abdominal cavity; and that a surgical operation could afford no relief. I intimated, however, that it was barely possible that I might be mistaken; that the tumor in the left hypochondrium and side might be an adherent multilocular ovarian tumor; that the fluid might be in an ovarian cyst, in which air had been accidentally introduced through the canula at the time of tapping; and that the hard deposit in the pelvis might be an adhering portion of the thickened wall of the cyst. I, however, considered the pelvic disease entirely independent of the abdominal tumor, and malignant in character. And as the patient previously had frequent attacks of intermittent fever, it confirmed the diagnosis in regard to the spleen.

The patient importuned me to operate, notwithstanding the assurance that an operation would be futile. I agreed to make a small opening into the abdomen and examine the condition of the tumor, and, if I found it removable, I promised her that I would complete the operation. An incision about two inches long was made through the linea alba, two gallons of transparent cider-colored fluid were drawn off, and the interior of the abdomen was examined with the index-finger. The tumor was found to be an enlarged spleen. It was hard, nodulated, and felt like a cirrhosed liver. The intestines were adherent to it. The omentum was very much congested and had small cysts attached to it. The vessels of the intestines were greatly engorged. The superior strait of the pelvis was occupied by a nodulated deposit, evidently cancerous. The tumor was not removed. The patient died three days after the exploration."

The diagnosis in the above case was obscure. The physician who wrote to me was mistaken. I had previously performed ovariotomy in the same neighborhood on one of his patients, and in certain points he thought the cases were similar. In his letters he says, "The tumor is not as large as that of Miss G." "The fluid resembles in color that removed in her case." "I hope my diagnosis may be correct."

There was, in some respects, a strong similarity between the two cases, which misled her physician. After emptying the main cyst by tapping in the case of Miss G., there still existed a large multilocular mass fixed in the left hypochondriac region, resembling the condition of things after paracentesis in the case just reported, and hence the parallel drawn between them. The fluids also resembled each other in color and in coagulability by heat. But here the resemblance ended. The evidences elicited by percussion before tapping were too characteristic in each case to be confounded by an expert.

c. Case XCI.—*Enlargement of the spleen, with ascites, mistaken for ovarian dropsy; tapped four times; subsequent disappearance of the fluid.* October 5th, 1865, Mrs. L. T. B., of Baltimore, consulted me in reference to an abdominal tumor, which had been pronounced ovarian. She was thirty-eight years old. She first menstruated at the early age of ten or eleven years, and had always been regular. She married at the age of eighteen, but had never conceived. Until this disease appeared, her health had been generally good.

The abdomen began to enlarge in 1859, accompanied by great swelling of the lower extremities. In 1860 she was tapped by Dr. Rider, removing twenty-six pints of amber-colored fluid, and in 1862 she was again tapped by Dr. Buckler, removing twelve pints of fluid of the same character.

The abdomen was quite large, but not greatly distended. There was dullness on percussion over the epigastrium, the upper part of the umbilical region, and over the whole left hypochondrium. This dullness existed in all positions of the body. At the other portions of the abdomen the percussion sound was resonant at the highest points. The abdominal cavity contained fluid, and fluctuation was distinct. Even in the left hypochondrium the abdomen was elastic; but by sudden pressure, so as to displace a stratum of superimposed fluid, a hard body could be felt by the fingers.

Diagnosis.—Hypertrophy of the spleen, accompanied by ascites.

August 1st, 1868, being on a professional visit to Baltimore, I made a hasty call on Mrs. B. Several weeks before her physician had tapped her, removing a large quantity of clear fluid. The abdomen had again become enormously enlarged, and all the indications of the fluid being contained within a cyst were present. I was satisfied, however, from the previous examination that this was not the case. She was broken down in general health.

After this she came under the care of Dr. John Morris, with whom I saw her again September 30th, 1868. The object of my visit was to tap her and to investigate the case further. She was still exceedingly feeble, and was becoming more emaciated. It was impossible for her then to lie with her head low. The respiration and pulse were both frequent. The abdominal distention was not so great as in August. When on her back, resonance could be detected by percussion in the left lumbar, and in the middle of the epigastric region, as well as in the right side of the hypogastrium. There was a dull percussion sound over the whole left hypochondrium, extending up the left wall of the chest, and across the upper part of the epigastrium. On changing her position, resonance existed over the most elevated points, proving that the fluid was in the cavity of the peritoneum. Fluctuation was very distinct. By suddenly displacing the fluid, a hard mass could be detected occupying the left hypochondriac and upper portion of the epigastric regions.

The uterus was enlarged and indurated, and admitted the sound three and a half inches. The pelvis was free.

I then tapped her, the fourth time, removing sixteen pints of very clear, light amber-colored fluid, which, by boiling, became only slightly coagulated or opaque. The fluid was examined next day by Dr. Drysdale, who discovered no ovarian or malignant cells. After tapping, the abdomen subsided only to a small extent, and the hard masses were more clearly defined. Corresponding with the points, which yielded the dull percussion sound, there was located a body resembling a greatly hypertrophied spleen,—its edge being quite superficial. Under this edge, and deeply seated in the centre of the cavity of the abdomen and above the umbilicus, could be distinguished a nodulated scirrhous mass, as large as a small orange, forming part of the large tumor. In the lower part of the abdomen, rising out of the pelvis, another body was discovered, which was thought to be an enlarged uterus. Between these tumors the abdomen was resonant.

March 17th, 1869, I visited the patient with Dr. Morris again. There had been little or no return of the fluid after the last tapping, but there was a great increase of the solid mass, which then occupied both hypochondriac regions, and extended downward below the umbilicus. There was also a slight improvement of the general health.

This case possesses some points of interest in relation to differential diagnosis. Every physician who had examined the patient was impressed with the idea that she was suffering from an ovarian tumor; and when I examined her in August, 1868, she had the symptoms of disease of the ovary. The distention being then too great to allow the intestines to float upon the surface of the fluid, the condition resembled cystic dropsy; while the solid portion, discovered in the left hypochondrium, was not unlike a multilocular mass developed in that portion of the cyst,—a not unusual complication. Such multilocular ovarian masses, developed in the walls of a large cyst, and elevated into one or other hypochondriac region, have often misled surgeons, and caused them to regard such conditions to be due to an enlargement of the liver or spleen. On the other hand, cases of ascites, with visceral hypertrophy, have been diagnosticated, as in the above case, to be ovarian dropsy. I had removed, only a few months before, a large multilocular ovarian tumor from a patient of one of the medical gentlemen consulted in the case just reported, who, believing that it was a case of ascites depending on a hypertrophied liver, would not be convinced until he saw me take away a large multilocular mass from the right hypochondriac region. Not long after this operation Mrs. B. consulted him, and, noticing a strong similarity between them, he made another mistake, but in an opposite direction. He directed the patient to me to have ovariotomy performed, in the hope that she might obtain the same relief that his first patient had received.

d. Case XCII.—*Hypertrophy of the liver, with ascites, mistaken for ovarian dropsy; autopsy.* March 28th, 1856, during a professional visit to Norristown, I was requested by a physician to see an elderly maiden lady, who, in his opinion, was suffering from an ovarian tumor. She was very much jaundiced and greatly emaciated. There was considerable enlargement of the abdomen; the upper portion on the right side was dull on percussion, and in many points hard and resisting,—indeed, nearly the whole right side was occupied by a large indurated mass. The tumor did not extend into the pelvis, and the lower portion, as well as the left side of the abdomen, was resonant. To the right of the umbilicus there was a point more prominent than the rest. This was elastic, but was semi-resonant on percussion. The uterus was small and the pelvis free.

Diagnosis.—Enlargement of the liver. The patient died soon after. The doctor made an autopsy, and the diagnosis was confirmed.

The symptoms associated with hypertrophy of the liver are similar to those accompanying enlargement of the spleen, so that I need not multiply cases to illustrate the points which distinguish them from ovarian tumors. These cases are not unfrequent, and in the chapter on Ascites several cases of the kind may be referred to.

e. Case XCIII.—*Cystic enlargement of the right kidney mistaken for an ovarian tumor; left kidney absent; autopsy.* March 19th, 1870, I met Drs. Rodman and Agnew in consultation in the case of Mrs. M. J. C., aged fifty-eight years, who was supposed to be suffering from an ovarian tumor. Menstruation had always been regular until the climacteric period, which occurred at the age of fifty-five. She had four children, the youngest being thirty years old. Twenty years before she was treated by Professor C. D. Meigs, and subsequently by Dr. P. B. Goddard, for uterine and ovarian trouble. Ever afterward she had an unpleasant sensation in the right side, which caused her to hold up her side with the hand, but it was always soft, and no tumor was noticed.

A tumor was first discovered in January, 1870, occupying the right lumbar region, and was examined by her physician. It was smooth on the surface at that time, but afterward grew rapidly, and became nodulated. After the appearance of the tumor she began to lose color and flesh.

The patient was a tall, spare woman, and had a cachectic appearance. When on her back, a tumor could be seen and felt in the right side of the abdomen. It was not very prominent, from ten to twelve inches in diameter, semi-elastic, nodulated, located in the right lumbar region, and extended beyond the linea alba into the left side. The percussion sound was dull over the right lumbar region and parts occupied by the tumor, and resonant all beyond its periphery. The character of the percussion sound below the tumor was particularly noted, and between the locality of the tumor and the pelvis the presence of the intestines was clearly indicated. The tumor was only slightly movable, and least so in a direction from the right toward the left side. The uterus was in the normal position, and was quite movable in the pelvis, which cavity was not occupied by the tumor. The sound entered the uterus two and a half inches. Motion given to the tumor communicated no impulse to the uterus, and *vice versa.*

After making an examination, I made particular inquiry in reference to the secretion of the kidneys. The patient was confident that a purulent discharge came away with the urine.

Diagnosis.—Tumor of the right kidney.

In order to confirm the diagnosis, I requested that some of the urine should be collected and examined.

March 27th.—Dr. Rodman reported to me that an examination of the urine had been made by Dr. Hall; color, pale and opaque; specific gravity 1008; alkaline; it contained one-fifth of albumen, some renal casts, epithelial scales, oxalate of lime, and triple phosphate, but no cancer cells.

March 31st.—On making slight exertion, the patient fainted and died, no symptoms of uræmic poisoning being present.

An autopsy was made on the 2d of April. The specimen was removed and presented to the Pathological Society of Philadelphia, and a report read, which was published in their proceedings in the *American Journal of the Medical Sciences* for October, 1870, p. 453, from which I extract the following:

"*Single unsymmetrical kidney; filled with pus, and forming abdominal tumor.*

"*Autopsy, forty hours after death*, by Dr. Willard, in presence of Professor Agnew and Drs. Rodman and Atlee. Considerable quantity of fat in the abdominal walls.

"Peritoneal effusion but slight. No signs of peritonitis; some slight adhesion of omentum to mass, hereafter described. Lying in right lumbar, inguinal, and umbilical regions was a large mass presenting somewhat the appearance of a distended stomach. Its shape was oval and globular, presenting no characteristic appearance of a kidney, since it was deeply enveloped in surrounding fat and connective tissue; while the portion resembling a stomach was found to be the immensely dilated pelvis. Upon removal, the kidney was found to be enormously hypertrophied, its pelvis greatly dilated, and the whole structure apparently one immense sac containing pus. Length, eleven inches; width, with pelvis, nine inches. Weight, thirty-three ounces. Ureter not dilated. No calculi save few gravel-stones, of size of mustard-seed. There were two arteries and three veins.

"Upon section, the kidney showed, in the aggregate, a largely-increased amount of renal structure, on account of hypertrophy, although in many places it was entirely destroyed, and nothing more than the mere capsule remained; while in at least eighteen different portions were depots or excavations in the renal structure, extending nearly to surface, which were all connected with the pelvis and filled with pus. Pelvis dilated so as easily to admit of one's fist.

"The cortical portion compared with pyramidal was in deficiency, but was really thicker than the normal non-hypertrophied condition of cortex. The whole structure was dark, congested, and much softened, and was decidedly unhealthy in appearance to the naked eye.

"The contents of the sac, upon examination, were found to consist largely of pus. Specific gravity 1022. Addition of liq. potass. or ammon. rendered the fluid more viscid. Boiling coagulated a portion. Under the microscope were seen pus and blood corpuscles, many of them disintegrated, and a few phosphatic (triple) crystals.

"Renal casts could not be found, though they were carefully and repeatedly searched for; yet this may have been due to their disintegration, since it was several days after death before the examination was made.

"At the superior portion of the kidney was a true cyst, of the size of an English walnut, entirely unconnected with the central cavity, filled with true cystic fluid, which was almost entirely coagulable by heat. This cyst was honeycombed by delicate white partitions or bands. Left kidney entirely absent, no trace of it being discoverable in any part of the abdomen.

"Supra-renal capsule, ureter, and renal vessels of left side all absent. Right ureter entered bladder very obliquely, and finally opened near median line. Slight depression in mucous membrane at point of normal entrance of left ureter.

"Bladder empty and healthy. Uterus and both ovaries healthy, as were other abdominal organs.

"Brain and thoracic viscera not examined.

"Referred to Committee on Morbid Growths.

"*Report of Committee on Morbid Growths.*—The tissue was highly granular, apparently, in part at least, from prolonged maceration. There were no traces of malignant disease."

The above case is one of interest in reference to differential diagnosis, inasmuch as the kidney has before now been mistaken for an ovarian tumor, and under that impression has even been extirpated by distinguished ovariotomists. In a case so closely resembling, in many points, a multilocular ovarian tumor, and on a point which has tested the diagnostic acumen of an expert, it would be improper to hold any one responsible for an error.

Other cases of tumors of the kidney have been reported in Chapter III., under the head of *B. Cysts of the kidney.* There are other conditions of the kidney resembling a tumor, to which attention should be called. The organ is not so fixed in position as those heretofore reported. It is movable to a much greater extent, and even to such a degree as to have received the name of *Floating Kidney.*

f. Case XCIV.—*A floating kidney of the left side, following the removal of the right ovary; at first mistaken for an ovarian tumor, but afterward diagnosticated correctly.* Mrs. E. K., aged twenty-nine, first menstruated at the age of fourteen years, and, having taken cold at the time, there was a suspension of the menses for two years. After their return they were always regular, but painful, and, at times, clotted. At the age of twenty she married, and has had four children. After the birth of her first child she suffered from procidentia of the uterus.

March 15th, 1849, I performed ovariotomy upon her, and removed the right ovary. A year or two afterward she sent for me again to consult me about another tumor, which she discovered in the opposite side. Upon examination I immediately pronounced the tumor to be one of the left ovary, but as it was comparatively small I advised her to let it alone. It was moderately hard, inelastic, very movable, and occupied the left lumbar region.

The patient not only continued to menstruate regularly, but conceived several times, and as often miscarried. I repeatedly examined the tumor, found it to increase slightly in size, and after a time its growth seemed to be arrested. Its mobility has always been remarkable, and it can be pushed in every possible direction.

Many years ago I abandoned the idea of its ovarian character, and decided that it was a *floating kidney* of the left side. It is now twenty-three years since the removal of the ovary, and about twenty-one years since the floating kidney was first noticed, yet the patient has enjoyed uninterrupted health.

When Mr. T. Spencer Wells visited Philadelphia, in the autumn of 1867, I took him to see this patient. He examined the case without knowing my opinion, and corroborated the diagnosis by pronouncing the tumor a *floating kidney.*

g. CASE XCV.—*A floating kidney of the right side mistaken for a tumor of the right ovary.* April 29th, 1869, Dr. J. Shrotz, an intelligent German physician, sent a patient to consult me about an abdominal tumor, supposed to be ovarian. Mrs. L. G. was twenty-three years old. Menstruation commenced at the age of sixteen, and continued to be regular until conception occurred. She married at the age of seventeen, and had one living child. A false conception followed. She again became pregnant, and during gestation she had frequent hemorrhages, and finally at seven months she miscarried with a dead child, and an adherent placenta remained attached for three days. This was in October, 1867. Between the time of the false conception and the last pregnancy she had several attacks of bleeding from the bladder, amounting sometimes to a pint of blood. Immediately after the miscarriage she noticed a hard lump, the size of an egg, in the right side on a line with the umbilicus. It was movable. Afterward it increased in size. At the time I saw her, menstruation was regular, but the discharge was dark colored.

When the patient lay on her back, with the abdomen exposed, a prominent projection could be seen on the right side on a line with the umbilicus. It was hard, and oblong in shape; its long diameter corresponded with that of the body. It was seven or eight inches in length and three or four in breadth. Behind it, inclining to the right, and more deeply seated, was another tumor of a similar form, which was found to be the same tumor divided by a sulcus. On the upper part of the superficial tumor, toward its left border, a small nodule could be felt. The whole mass was very movable in all directions, but least freely downward. The percussion sound over it was dull. The abdomen was resonant over the whole left side, and between the lower edge of the tumor and the pelvis. Above the tumor, in the right hypochondrium, it was dull.

The os tincæ was thrown back, the uterus was quite movable, independently of the tumor, and admitted the sound two and a half inches. The speculum revealed granular inflammation of the os and hypertrophy of the cervix.

Diagnosis.—*Floating kidney* of the right side.

h. Case XCVI.—*A floating kidney of the left side mistaken for a tumor of the left ovary.* June 12th, 1865, Dr. Bye, of Kimbleville, Chester County, Pennsylvania, brought Mrs. A. McD. to see me, with an abdominal tumor, supposed to be ovarian. She was fifty-seven years old, large, healthy in appearance, and the mother of six children. She menstruated last in 1861. She had several times passed bloody urine.

The tumor made its appearance in 1859, but remained stationary in size until 1864, after which it increased rapidly. It was as large as the head of a new-born child, hard, inelastic, and irregular in shape. Although unyielding, it was not so hard as a uterine fibroid. It was located in the left lumbar region, the largest portion being above the line of the umbilicus. It was quite evident to sight. It was movable in all directions and to a great extent, and no connection with the uterus could be traced. The pelvis was free and the uterus small. The percussion sounds corresponded with those in the case last reported.

Diagnosis.—*Floating kidney* of the left side.

i. Case XCVII.—*An omental tumor mistaken for an ovarian tumor.* January 2d, 1867, while on a professional visit to Clifton Springs, New York, Dr. D., of Rochester, brought Mrs. W. of that city to consult me in reference to an ovarian tumor, which she was anxious to have removed. About four weeks before I had received the following letter from Dr. D. in reference to this case:

"Dear Sir,—I have under my care a lady who has an enlargement in the *right ovarian* region, whose case I will detail to you, and learn if you would think it desirable for her to have an operation.

"Mrs. W., the patient referred to, is twenty-nine years of age, has been married eight years, has had two children; no miscarriages. The youngest child was born in September, 1861; and some three or four months after this she first noticed the enlargment in the right side. Her attention was called to it by severe pain, from which she suffered frequent attacks, lasting for several days, and recurring in from three to five weeks. These attacks increased in severity, till she had hardly rallied from one before the time came round for another.

"She has suffered in this way for four years, with but slight, and that very temporary, relief, when I was called to take charge of her case.

"The paroxysms of pain seemed like the most agonizing labor-pains, and, until I had satisfied myself by the most careful examination, I thought there was uterine expulsive action from some cause; but when I discovered the tumor, I concluded it must have much to do with it, and directed hot fomentations to be vigorously and persistently applied, gave an anodyne and antispasmodic mixture, and kept up a free action of the kidneys (which were greatly disturbed) with marshmallow. Since that time, one year, Mrs. W. has been free from these paroxysms, occasionally threatened with a return, but enabled to ward it off by rest, fomentations, and anodynes.

"The tumor seemed nearly round and about the size of an ordinary coffee-cup. It remained about the same size for eight months after I saw her, and then *suddenly and entirely disappeared.* There was no peculiar sensation at the time. She noticed its disappearance after coming in from the water-closet.

"On examination I could find nothing of it, and thought it must have been a phantom tumor. It did not return for two months, then suddenly appeared about as before. It remains about the same size. There has been extensive ulceration of the cervix, which has been treated by applications of nitrate of silver.

"Her menstrual periods have been regular until the last one, which she has passed some two weeks.

"I might have said before that Mrs. W. is a slightly-built woman, about five feet two inches in height, brown hair and gray eyes; thinks she had salt-rheum or erysipelas some years ago. Did not nurse her children. Now Mrs. W. is pretty well, though she has recently had an attack of congestion of the lungs. She is not disturbed by the tumor, but fears she is pregnant, and would like to know, if such were the case, whether you would think it advisable to remove the tumor soon."

After the receipt of this letter, I appointed a meeting at Clifton Springs, where I examined the patient. The tumor was in the anterior part of the right lumbar region, on a line with the umbilicus. It was about the size of the fist, tolerably firm, was quite movable, and could be pushed about in all directions, but further upward than anywhere else. It could not be forced down into the groin, and its motions had no influence on the uterus. On percussing the tumor, it returned a semi-resonant sound, as if it contained air, or was in some way associated with the bowel.

Diagnosis.—An *omental tumor.* Of course an operation was out of the question.

These tumors are not unfrequently met with, and usually are found upon the right side. I call them *omental*, believing them to be developed in the omentum, but I know nothing of their pathology. They are small, firm, very movable, and, in this respect, as well as in their locality, resemble the floating kidney. They differ from the floating kidney in being semi-resonant on percussion, the latter being dull. This partial resonance is explained by the omental tumor being underlaid by intestines. They also differ from the renal tumor in the fact that they may disappear and reappear, and that they may sometimes be felt in one position of the body and not in another. The disappearance of the tumor may be accounted for on the supposition that, being so small and movable, it may occasionally slip behind the bowels, out of reach, for a short period. Under these circumstances, and for this reason, it is sometimes exceedingly difficult to detect them, while at others they are readily found. Very often, too, when not found in one position of the body, a change of position will disclose them. Usually the patient herself will put her body in the best posture for their detection. Of course, in these, as in all other cases of abdominal tumor, corpulency will more or less embarrass the surgeon.

So far as my experience goes, these tumors are of an innocent, benign character, and do not interfere with the general health, except so far as they may distress the mind of a nervous patient.

The next case is introduced under the head of enlargements of the abdominal viscera, notwithstanding the tumor did not originate above the brim of the pelvis in the abdominal cavity; yet, as it so closely resembled some of the cases which we have just been considering, I have thought best to place it here. It was proved not to be a *floating kidney* or an *omental tumor*, but an *ovarian* multilocular tumor, with unusual characteristics. It was one of those exceptional cases, which tend to puzzle the most accurate observers, and prove the value of the general rules of diagnosis.

j. CASE XCVIII.—*A multilocular ovarian tumor resembling an omental tumor; its character only determined by ovariotomy.* May 7th, 1869, Mrs. E. L., of New York, called to see me with the following interesting letter from her physician, Dr. Emil Noeggerath, of New York:

"DR. ATLEE. DEAR DOCTOR,—I have asked the bearer of this, Mrs. L., to consult you about her case, which is somewhat intricate in its nature; and I should like, before deciding as to the proper treatment, to have your opinion with regard to the character of the tumor.

"Mrs. L. has always been healthy, was married in 1866, and gave birth to her first child on the 13th of December, 1867. Forceps applied on account of twisting of the cord around the neck of fœtus. Made a good recovery. Her abdomen, however, remained larger than usual. Examination, made in January, 1868, revealed the presence of a swelling in the *right* ovarian region. It was oblong, stretching from right to left, floating pretty freely in the right section of the abdomen, its edge was in close contact with the right corner of the uterus (not, however, attached to it). Length of swelling from three to three and a half inches. It was smooth and elastic, very slightly tender on being touched. It gave the impression of being a fatty tumor, not solid enough for a kidney, too equally oblong for an ovarian tumor, too movable for a hydrops of the Fallopian tube.

"During the summer of 1868 Mrs. L. left the city and felt pretty comfortable, with the exception of occasional bearing-down sensations.

"In the middle of September she had, for the first time, a pretty smart attack of pain in the left iliac region, with a sensation of nausea and a few diarrhœal discharges. A week after the first she experienced a severe attack of pain, and during October and November she was also troubled slightly, on several occasions, in a similar manner. I examined Mrs. L. again in the latter part of November, and in January, 1869. No trace of the former tumor could be felt, but the uterus seemed to be enlarged and softened in such a manner that a very strong suspicion of existing pregnancy fixed itself in my mind,—the more so, since other physical and rational signs of this condition began to develop themselves.

"On February 3d, Mrs. L. had an attack of the most intense, acute suffering, starting in the left ileo-lumbar region and spreading toward the toes, frequent desire to urinate, and a sensation of numbness in the bladder or rather urethra. Very large doses of morphia had no effect. It was necessary to put her under the influence of chloroform to subdue the pain. The urine, on being examined, showed numerous crystals of oxalate of lime. I supposed the attack was caused by stone in the ureter.

"On the 14th of March I made another examination, and found that the uterus and abdomen had decreased in size. I passed the sound and found the uterus empty, but instead I could now make out the presence of a tumor, just on top of the uterus, which seemed to fit the fundus exactly.

"The tumor was oblong, soft, elastic, with an indistinct fluctuation. The tumor is so movable that by manipulation it can be carried toward the right, as well as the left side, high enough to come within reach of the floating ribs. On repeated examinations, it was found that the tumor varied in size and sensibility. At times it appeared more spherical and was then more sacculent, and much more tender to the touch. Lifting it up from out of the pelvic cavity, certain uneasy sensations disappeared, but whenever Mrs. L. had one of her severe attacks, no amount of artificial displacement would give any permanent relief. The oblong tumor is occasionally harder, like solid flesh, and then somewhat flattened antero-posteriorly. Usually, however, the larger portion, and especially the left upper half, gives the sensation of a fatty tumor. When examining through the vagina and touching the lower surface, and moving it to and fro by grasping it through the abdominal parietes, it is evident, first, that there exist several shallow linear indentations or rather furrows, running over the lower edge antero-posteriorly; second, that in the centre of the lower surface there exists a sort of hiatus, bridged over by a thick membrane, which latter exhibits certain folds, by which the membrane can be made out distinctly; third, near the right corner of the tumor is attached a flat, much softer mass than that which constitutes the principal mass, feeling very much either like an ovary or a renal capsule, in shape as well as in density.

"My diagnosis is not fully made up, whether it is a diseased kidney, ovary with occasional twisting of its pedicle, or a tumor arising from the omentum.

"Under all circumstances, it seems to me that its rapid growth (I have no doubt that it is the same tumor originally detected in the right iliac region), its tendency to inflammatory paroxysms, call for radical interference. If it is a kidney, exploratory tapping would be out of the question.

"I wish, dear doctor, you would let me have your important opinion in the case, since I know that your great experience in abdominal tumors would go very far to strengthen my opinion in one direction or the other."

I examined Mrs. L. in my office. She was thirty years old, and first menstruated at the age of fourteen. The menses had always been regular, free from pain, never profuse, and their duration eight days. She was married at the age of twenty-eight, had one child, which she nursed six months, then living and healthy. She herself appeared to be in excellent health. There was some fullness in the abdominal region, not so much owing to the presence of a tumor, as to adipose deposit in the walls of the abdomen. When recumbent on the back, the abdomen was uniform in shape, and there was observed no unusual protuberance beyond what would be produced by a pretty large accumulation of fat. On percussion, there was resonance everywhere, except above the pubes. On making deep pressure, a pretty firm tumor could be detected in the lower central part of the abdomen, inclining toward the left side. This tumor was very movable, could be pushed high up in the cavity of the abdomen, into the left side, and into both inguinal regions. When pressed into the sides, and examined through the thinner portions of the abdominal walls, it was found to present a smooth surface, and was less resisting to pressure than a *hard* fibroid, but felt not unlike a *soft* fibroid tumor, or more like a multilocular ovarian tumor. With the finger in the vagina, and the hand on the abdomen pressing the tumor toward the pelvic cavity, it could be felt *anterior* to the uterus and behind the symphysis pubis, its lower surface being convex, smooth, and slightly elastic, and less resisting than a hard fibroid tumor. On again elevating the tumor toward the abdominal cavity, the two hands could be made to meet between it and the pubes. The os tincæ was thrown backward, the sound passed into the uterine cavity to the distance of three and a half inches, and its end could be detected to the right of the linea alba about two inches above the pubes. On pressing the tumor downward while the sound was in the uterus, the latter was disturbed, but on dragging the tumor upward, no impression was made upon the sound. If, therefore, the tumor had been attached to the uterus, the pedicle must have been very long. The examination, however, was made without an assistant, and this part of it was necessarily more or less imperfect.

The speculum revealed an enlarged and inflamed os and cervix uteri. The sound, also, gave some pain, indicating some endometritis. The tumor, likewise, was more or less sensitive, particularly on its left border. It was the size of a small child's head at birth.

My reply to Dr. Noeggerath's letter was as follows:

"MY DEAR DOCTOR,—The case of Mrs. L. is one of great interest, which cannot, in its present stage, be diagnosticated with certainty. I have, however, concluded that it is neither renal, omental, nor mesenteric. I believe it to be either a *soft uterine fibroid* tumor, with a long membranous pedicle, or a *multilocular ovarian tumor*. I am most inclined to consider it *ovarian*. I should mention that there is one point favorable to the omental or mesenteric character of the tumor, and that is, no matter how much the tumor is elevated by pressure it does not drag the uterus with it. This would seem to indicate that no attachment existed between the tumor and the uterus,—such as exists between an enlarged ovary and the uterus. The pedicle, however, of an ovary may be so long as to allow this very state of things to exist. I must confess that the case is a puzzle, to be unraveled by future development. Still, I will view it as an ovarian tumor until further light is thrown upon the case.

"I took the liberty, also, of making a speculum examination of the uterus. The os and cervical canal are inflamed, and the cervix somewhat thickened. The uterus is elongated. May not some of her painful attacks be dependent upon this condition? Excuse me for throwing out this hint, and also for suggesting a course of local treatment to the uterus itself.

"With regard to treatment for the tumor, my opinion is against all surgical interference for the present. Place the patient under a course of muriate of ammonia, in ten-grain doses three times a day, maintain the general health by exercise and nutritious diet, and watch and wait for further developments."

In answer to a letter inquiring respecting the further history of this case, Dr. Noeggerath says:

"October 16th, 1870.

"DEAR DOCTOR,—In reply to your letter inquiring of the fate of Mrs. L., I have to say that soon after her return from your city the tumor began to grow rapidly, and to give so much suffering that it appeared necessary to resort to some radical means of treatment.

"A consultation was held with Drs. Peaslee, Sims, and Thomas, and all agreed to make an exploratory incision. This was done on the 11th of January, 1870, and the tumor, found to be a multilocular ovarian cyst, was removed by abdominal section. The patient died in the night of the 17th of January, without any decided symptoms of peritoneal inflammation, but rather from exhaustion of the sympathetic nervous system. The pedicle was severed with the electric cautery, and, as the bleeding did not stop sufficiently, tied en masse with carbolized catgut and allowed to drop into the abdomen."

k. CASE XCIX.—*Tumor of the bowel mistaken for an enlargement of the left ovary; autopsy.* August 23d, 1861, in consultation with Dr. William Goodell, I visited Mrs. J. D., aged thirty-five. She was the mother of five children, the youngest being five months old. During the last pregnancy her health was not good, and three days after parturition she was seized with a very severe chill and an acute pain in the abdomen, succeeded by high fever, and ever after she was a great sufferer. The left side would often swell up, accompanied by acute pain, and again the tumefaction would subside, when she would obtain relief. Still, she never properly recovered, but grew weaker and more and more cachectic. Dr. Goodell at last concluded that there was enlargement of the left ovary, and desired me to see the case with him.

On making an examination, while the patient was on her back in bed, I found an evident fullness of the abdomen, and, in the left side, rather above the inguinal region, a distinct tumor. On palpation this tumor had all the characteristics of an elastic cyst, and was quite sore to pressure. It was also only very slightly movable, and on percussion returned a resonant sound in some parts and a semi-resonant in others.

As Dr. Goodell was about removing from the city, he requested me to take charge of the case, and I continued my visits. Every few days she would be seized with intense pain in the left side, and an increase in the size of the tumor, with great tympanites and abdominal tension. This would be followed by diarrhœa, and again a gradual softening of the abdomen, and a diminution in its size. All this time the percussion sound of the tumor was resonant.

I could not determine the nature of the case, and all treatment failed to relieve her. October 3d she had another severe attack, followed by rapid distention of the abdomen, and she speedily sank, and died at seven o'clock P.M. on the 4th.

A post-mortem examination was made twenty-four hours after death. On opening the abdomen, a large quantity of gas immediately escaped from the cavity of the peritoneum. The outside of the intestines was covered over with feculent matter, and a large accumulation of thin brown fluid, which had evidently escaped through an opening in the bowel, filled the pelvis. The peritoneum, everywhere, was opaque and thickened, as if from old inflammation, and the intestines were strongly adherent to each other. A large cystic mass, covered by a vascular omentum, occupied the left side on a line with the umbilicus. Its size was eight or ten inches long and five or six inches wide, making an oblong tumor. It was strongly adherent to the left abdominal wall, and at this point terminated in a very contracted bowel, with which it communicated by a small opening. On attempting to separate these parietal adhesions, the cystic wall proved so fragile that it gave way and remained attached to the abdominal wall. Upon a close examination of the cyst it was ascertained to be an expanded portion of small intestine, its coats being greatly thickened, and its whole interior surface in a state of ulceration. An adjacent gland was enlarged to the size of a walnut, and its interior had a medullary appearance. The immediate cause of death was attributed to perforation of the bowel and an escape of its contents into the cavity of the peritoneum.

CHAPTER XII.

DISTENTION OF THE URINARY BLADDER.

The abnormal accumulation of urine in the bladder has sometimes been mistaken for an ovarian cyst. This condition of the bladder usually arises from some obstruction at its outlet, caused either by a pelvic tumor, or a retroverted and enlarged uterus. It may also occur as the result of paralysis. It assumes several of the prominent characteristics of a unilocular ovarian cyst. The tumor formed by it is circumscribed, pyriform, or globular in shape; elastic, hard, smooth, fluctuating, and dull on percussion. It gradually increases in size, and the percussion sound, as well as the shape, is not affected by change of posture. Generally, however, there is more local distress, more constitutional disturbance, and more pelvic complications than occur in connection with a unilocular ovarian tumor. The urine is not passed at all, or it comes away in drops or small jets, and is accompanied by a frequent desire to urinate, pain, and vesical tenesmus. These symptoms are succeeded by chilliness and fever, and finally by urinous exhalation, typhomania, and uræmic coma. The tumor of the bladder is always central in position, which is not unfrequently the case with an ovarian tumor, particularly after it fills the cavity of the abdomen.

In all cases of doubt, however, the character of the tumor may be most speedily and positively decided by the employment of the catheter. Even this, in an inexperienced hand, may fail to disclose the real condition of the patient. The bladder, in these cases, is usually much elevated, and the urethra drawn up and elongated, so that the female catheter is used to much disadvantage. By employing a male catheter, at the same time that we press any pelvic tumor that may be present away from the urethra, we may overcome the difficulty and reach the cavity of the overloaded bladder.

Case C.—*A distended urinary bladder, caused by a retroverted pregnant uterus, mistaken for an ovarian tumor.* October 29th, 1865, I visited Mrs. P. H., in consultation with Drs. R. and R., of Kensington, two old and respectable physicians. I was requested to see the patient because it was considered that she had an ovarian tumor. She was thirty-five years old, had six children, the last one born in July, 1864, which died in six weeks. She menstruated regularly until July 4th, 1865, when her period was anticipated, and afterward there was no return. She herself thought she was pregnant, as she said her feelings indicated it. About one month before my visit she first noticed an enlargement, accompanying which was a difficulty in urination, not being able to pass more than a few drops of urine without great straining. The enlargement afterward gradually increased, so did the distress, and the difficulty in urination continued. Defecation was also rendered difficult. Dr. R. assured me that whenever he pressed the tumor in the vagina away from the urethra, a a few drops of urine would flow.

The abdomen of the patient was as large as a woman at the full period of pregnancy, but different in shape. It was peculiarly prominent with a globular tumor, and was very firm, tight, smooth, elastic, and fluctuating. It was dull on percussion, but resonant on both sides of and above it, and was quite sore to the touch. On examining per vaginam, I found the pelvis wholly occupied and firmly impacted by a pretty solid mass, which almost forced the posterior wall of the vagina between the labia pudendi. No os tincæ could be discovered, while the track of the vagina could be traced going up behind and beyond the pubes. The mystery of the case was soon unfolded: *the encysted tumor in the abdomen was an immensely distended bladder, and the tumor in the pelvis was a pregnant retroverted uterus.*

I introduced a catheter into the bladder and drew away half a bucketful of urine, amounting to twelve pints. The bladder was so perfectly paralyzed by over-distention that in doing this it had to be emptied by external pressure with the hand.

After having emptied the bladder, I attempted to restore the uterus to its proper position, but the patient was too sore to bear the necessary manipulation. Placing her, however, under the influence of an anæsthetic, I made another attempt, and succeeded in reducing it, so that the os uteri presented in the centre of the pelvis, and all signs of a pelvic tumor disappeared, as well as all evidence of an abdominal cyst. The patient had a good recovery, and was delivered of a healthy child at full time.

CHAPTER XIII.

ACCUMULATION OF FÆCES IN THE INTESTINES.

FECAL accumulations sometimes occur to a very great extent, produce both general and local enlargements of the abdomen, and resemble abdominal tumors. I am not aware that unilocular ovarian tumors are ever imitated by these collections in the bowels, but I know that such collections have been mistaken for multilocular ovarian tumors, and the latter have been mistaken for the former. In palpation or manipulation of the pelvis and abdomen in cases of long-retained fæces, the sensation to the hand of the examiner is not unlike that communicated by an ovarian tumor composed of numberless small cysts. In both cases a more or less nodulated condition exists,—in the latter, however, there is more positive elasticity on pressure, and in the former, or fecal tumor, a more dough-like sensation; which difference, perhaps, can only be recognized by the *tactus eruditus*. In the ovarian tumor, percussion is always accompanied by a decidedly dull sound; while in the fecal collection it is more or less resonant, generally semi-resonant, or nearly dull, but never completely so. Usually, the intestinal tumor is accompanied by obstinate constipation, and when the bowels are moved, small scybalous masses escape. Rarely, diarrhœa occurs, which deceives both the patient and physician, as this diarrhœa does not in the least affect the fecal collection, which appears to be adherent to the distended wall of the intestine at all points, except a mere track through which the more fluid contents of the bowels find their way. It would appear as if the indurated collection absorbed all moisture from the intestinal mucous membrane, that both became hardened, and almost inseparably adherent.

a. Case CI.—*Accumulation of fæces in the sigmoid flexure mistaken for an ovarian tumor.* December 16th, 1858, at the request of Dr. T. R. S., I visited his sister-in-law, Miss C. A. S., who was under the care of a physician in the country. She was about thirty-one years old. Menstruation had been regular, but rather painful. Her general health was delicate. She had been troubled with erratic neuralgia for a year or two, a slight cough, and loss of voice. Her physician had been treating her for uterine disease, which he pronounced entirely well. Recently he detected a tumor in the left inguinal region, dipping down into the pelvis, which he considered ovarian. She had retention of urine, followed by strangury, and required to be relieved by the catheter. For several weeks she had taken opium to procure rest at night, and in consequence became greatly constipated.

I examined the patient. The whole lower portion of the abdomen, particularly over the left side, was sore to pressure. There was no undue prominence. It was resonant on percussion everywhere, except in the left inguinal region, and there the resonance was masked, or imperfect. Palpation over this region detected nodulated masses, which yielded to pressure. On examining per vaginam, the posterior wall was found forced forward, and behind it were felt the same nodular masses, extending up into the left groin. These could be impressed similarly to stiff dough. The uterus was impacted in the pelvis, anteverted, and the sound entered one inch. The rectum was examined and found occupied by a mass of hardened fæces.

Diagnosis.—A tumor consisting of an accumulation of fæces in the rectum and sigmoid flexure of the colon.

The administration of ox-gall, both by the mouth and rectum, removed all traces of the tumor.

b. Case CII.—*Accumulation of fæces in the intestines, combined with retention of urine, mistaken for a cancerous tumor.* December 28th, 1858, I was called to see Mrs. E. B., aged about thirty, who had been under the care of a highly intelligent physician, had been treated for a cancerous tumor, involving the uterus, and, in consequence, had been pronounced in a hopeless, dying condition. Her bowels not having been moved for three or four weeks, she took a dose of castor oil a week before I saw her, which caused her to have a *liquid* discharge, and this was followed by an obstinate diarrhœa, accompanied by great straining. This was attempted to be treated by the use of astringent injections, but the nozzle of the instrument could not be introduced into the rectum in consequence of the obstruction caused by the supposed tumor. About five weeks before my visit she was seized with flooding, passing clots, and accompanied by bearing-down pains. She had been married about two years, had never conceived, and menstruation had always been irregular.

I found her in the following condition: the abdomen was enlarged in the centre to the size of that of a woman in the seventh month of pregnancy by a pyriform tumor, which was dull on percussion, and fluctuated. There was also considerable fullness and hardness in the left inguinal and lumbar regions, which were semi-resonant on percussion. The pelvis was entirely filled by a solid mass behind the posterior wall of the vagina, pressing the latter forward against the pubes, so that the finger could not pass without using great force and causing intense pain. A dark watery discharge constantly escaped from the bowels, accompanied by almost uninterrupted straining and protrusion of the bowel. The suffering was intolerable, and the patient was much prostrated. No urine had been passed for more than twenty-four hours. The uterus was inaccessible.

After making a careful examination I arrived at the following conclusion: that the fluctuating tumor in the abdomen was a distended bladder, the urine being retained by pressure on the urethra; the pelvic tumor was an accumulation of dry, hard fæces in the rectum, and actually adhering to it; the agonizing bearing-down pains were the fruitless efforts of the muscles to expel the mass; the protrusion of the mucous membrane was the result of these efforts; and that the diarrhœa arose from increased peristaltic action carrying forward the secretions of the bowels and the liquids she drank through a small channel, incapable of permitting the escape of the more solid matter.

The first object was to relieve the bladder. The introduction of the catheter was resisted until I pressed away from the urethra the impacted fæces, which were like so much stiff dough. A basinful of urine was then drawn off, affording great relief. The next object was to unload the rectum. With the handle of an iron spoon in the rectum, aided by my finger in the vagina, I scooped out a basinful of dark-colored, hard, almost inodorous fæces, freeing the rectum. A large quantity still remained in the sigmoid flexure and descending colon. These operations were very painful. The uterus was now examined, and, contrary to the opinion of her physician, was found to be small and healthy.

A few moments after, the patient expressed herself greatly relieved and comfortable, soon went to sleep, and did not get awake until next day. Ox-gall afterward administered by the mouth and rectum carried off large quantities of hard fæces. The diarrhœa, protrusion of the bowel, expulsive pains, and all signs of tumor disappeared, and the patient entirely recovered.

c. CASE CIII.—*Accumulation of fæces and strawberry-seeds in a cul-de-sac of the bowel, resembling a tumor.* August 23d, 1867, Mrs. A., of Pittsfield, Massachusetts, consulted me about a fullness on the side of the rectum, which was the source of great annoyance and distress. It had existed for two years, had been repeatedly examined by physicians, and pronounced to be a tumor. She had been treated for it, but received no relief. I did not examine her, but gave her a prescription for hemorrhoids.

September 13th.—She reported again, and as she was not relieved, I examined her in my office. I could not detect the presence of a tumor. There was some fullness on the side of the rectum noticed during the act of straining. Her bowels had been opened freely that morning, and in consequence, she stated, the tumor was not so marked. She described it as something that always came in the way in the act of defecation, so that it was often very difficult to accomplish that act. I examined the patient, both in the upright and recumbent position, but could discover no displacement, or enlargement of the uterus, to account for the pressure on the rectum, of which the patient so persistently complained.

September 24th.—The patient, still in the firm belief that a tumor existed, called upon me again. She had not been benefited by the treatment I had directed. I now requested her to return to her boarding-house, have her rectum well cleansed out by repeated enemata, after which I would call for the purpose of making a more thorough examination. This was done. On pushing my finger to its utmost extent up the rectum, I discovered a mass of dry, hard fæces, occupying a cul-de-sac of the bowel, adhering firmly to it, and so situated as to allow the other contents to pass by from above and be discharged without disturbing it. I, however, could not convince her of the fact, so positive was she of the existence of a tumor.

As the proper and best solvent of fecal matter, I ordered twice a day, by the mouth and rectum, the use of ox-gall.

November 1st, the patient, highly elated, called to express her gratitude for the cure. She was now entirely well. The prescription had relieved her. The tumor had disappeared in the form of an immense number of *strawberry-seeds, which had been swallowed about two years and five months before!*

The details, in the above cases, refer exclusively to simple accumulations arising from constipation and inertia of the bowels. Other instances occur, complicated with stricture of some portion of the bowel, or with a tumor impinging on some part of its cavity. In such cases an examination by the rectum or vagina may not aid us in the diagnosis, as the collection of fæces, as well as the immediate cause of the obstruction, may be beyond reach of the finger. The difficulty of determining the exact condition of the patient is increased, but the distinguishing characteristics above referred to will clearly contraindicate the existence of an ovarian tumor.

d. Case CIV.—*Accumulation of fæces in the intestines, caused by the pressure of a malignant tumor.* December 25th, 1868, I visited Mrs. J. L. S., at Bethlehem, Pennsylvania, in consultation with Dr. Leinbach, a most excellent physician of that place. She was twenty-five years old, had been married five years, and had never conceived. Until recently menstruation had been regular. Dr. L. had previously treated her for granular inflammation of the os uteri. August, 1868, she was seized with extreme pain in the bowels, accompanied by vomiting and retching. Menstruation was approaching at the same time. Similar attacks frequently recurred, attended with great distention and commotion of the bowels, borborygmi, and eructations. Dr. L., having discovered a tumor in the right inguinal region, concluded that it was a case of tubal pregnancy, and that this caused all the violent symptoms. For several weeks the discharges from the bowels were liquid, pale, and frequent. After the attack in August she regularly emaciated, and when I saw her she had lost thirty pounds in weight. The appetite was good, but the stomach rejected the food. The tongue was clean.

The abdomen was tumefied, elastic, and resisting. Percussion elicited a semi-resonant sound everywhere. By deep pressure over the whole course of the colon uneven masses could be felt, as if the bowel was occupied by impacted fæces. In the right inguinal region a more resisting nodulated mass could be detected. It was immovable, quite tender on pressure, deep seated, and dipped into the pelvis. The cervix uteri was somewhat indurated. The body of the uterus was surrounded by hard, nodulated deposits, in which it was impacted and firmly fixed, and which filled the superior strait of the pelvis. These and the tumor in the right groin seemed to form one mass. The sound entered the uterus to the distance of one and a half inches, and was arrested by a solid obstruction. The rectum was empty.

Diagnosis.—Malignant disease of the fundus uteri, or in its vicinity, with an accumulation of fæces in the bowels, caused by pressure.

Treatment.—Arsenic and ox-gall.

January, 1869, I visited the patient again. An immense quantity of feculent matter had been removed by the ox-gall, and its discharge was followed by great relief. The irritability of the stomach was entirely relieved, and the whole aspect of the case was very much altered. The abdominal tumefaction had disappeared. The cervix uteri was longer and more pliable, the uterus somewhat movable, and the deposits about it were diminished in size and hardness. There were no fever, no pain, and no vomiting. She ate well, slept well, was stronger, and there was some hope of permanent improvement.

March 12th, 1869, as the patient was much worse, I was summoned again. About ten days before she had an attack of stercoraceous vomiting, followed in a few days by large and frequent discharges of purulent matter from the bowels, and by which she was greatly relieved. The tongue was very red, the abdomen was tympanitic, the indurated and nodulated condition of the lower portion of the abdomen had diminished, the pelvis was more free, and the uterus more movable. But the powers of life were failing.

April 17th, 1869.—After my last visit, no treatment seemed to avail, and she died from the effect of some internal malignant trouble. No autopsy was made.

CHAPTER XIV.

ACCUMULATION OF GAS IN THE INTESTINES.

It would seem that pure tympanites could not be mistaken except by a very careless observer, and yet it may be so associated with certain other conditions as to mislead. The most marked characteristic of gaseous accumulation, either general or local, in the abdominal cavity, is *a resonant sound on percussion.* If, therefore, in general intumescence of the abdomen, resonance exists everywhere, the enlargement must be dependent on flatus; and if in local tumefactions within the abdominal cavity, or in projections at points deficient in muscular power, these portions are resonant on percussion, their character is gaseous, no matter what appearance they may present to the eye. A very common source of error arises in women who have borne children. Sometimes the recti muscles, in consequence of over-distention during pregnancy, having separated at the median line, and the natural support having been removed at that point, an oval protrusion, resembling a tumor, may be noticed in the centre of the abdomen. This may be particularly marked when the patient is on her back and attempts to rise. I have known this intestinal protrusion to have been mistaken for a tumor several times. Percussion will at once correct the error.

a. Case CV.—*Accumulation of gas in the small intestines mistaken for abdominal tumor.* July 28th, 1863, I visited Mrs. T., in consultation with Dr. J. R. B., who thought she had an abdominal tumor. She was the mother of three children. Menstruation was regular. Her general health was not good.

When in a standing position, the abdomen was rather pendulous, and protuberant below the umbilicus. When in a recumbent posture on her back, with the abdomen exposed, the integument was loose, but the centre of the abdomen was prominent, resembling a tumor. The fictitious tumor was oblong, its long diameter corresponded with the longitudinal axis of the body; it was smooth, soft, elastic, and non-fluctuating. A resonant percussion sound was elicited from every part of it, and there was nothing, except the mere abnormal shape, to indicate either a solid or encysted tumor. On the patient making an effort to rise from the bed, while restrained, so as to call into action the abdominal muscles, the oval tumor was made much more prominent, as it came up between the separated recti muscles. The resonant sound was again rendered very distinct by percussion.

Diagnosis.—A separation of the recti muscles at the linea alba, which allows the distended small intestines to protrude between them, thus resembling a tumor.

This is a species of hernia that has not unfrequently been mistaken for abdominal tumor.

b. CASE CVI.—*Accumulation of gas in the intestines mistaken for two ovarian tumors.* The notes of this case were mislaid, but I remember the important points. I was called by a physician of this city to see a patient in consultation. He said that she had two ovarian tumors, both ovaries being enlarged. He had obtained her assent to an operation, and had arranged all the preliminaries for it. As he had several times witnessed my operations for the removal of the ovary, I visited the patient with him, expecting to confirm his diagnosis.

She was a woman of child-bearing age, and had several children. She was thin, and enjoyed excellent health. On making an examination while she lay on her back in bed, I noticed a very peculiar enlargement in each inguinal region, resembling two distinct tumors. They were both oblong, soft, elastic, and non-fluctuating. Their long diameter was parallel with the corresponding Poupart's ligaments, and extended from the crest of each ilium to the pubes. The percussion sound, however, was decidedly resonant.

Diagnosis.—A separation or weakness of the fibres of the oblique muscles, which permits the distended bowels to protrude in the form of a tumor.

CHAPTER XV.

MUSCULAR DERANGEMENT OF THE ABDOMINAL PARIETES.

To a certain extent muscular derangement received consideration in the preceding chapter, as certain gaseous protrusions were shown to depend upon debility, paralysis, or separation of the muscular fibres. There are, however, though rarely, certain local muscular contractions, or anomalous hysterical contortions of the abdominal wall, that may resemble a tumor. In all cases of doubt arising from this cause, the diagnosis may be determined by percussion, and the use of an anæsthetic agent carried to the extent of entire muscular relaxation.

CHAPTER XVI.

INFLAMMATORY DEPOSITS IN THE PELVIC AND ABDOMINAL CAVITIES.

THE solid and fluid deposits resulting from peritoneal inflammation sometimes strongly resemble ovarian dropsy. The intestines may become agglomerated into one or several masses, and enveloped in large deposits of lymph, the mesentery, thus thickened, shortened, and non-extensile, holding them like a tumor against the posterior wall of the abdomen; while serous effusion may also go on extensively, elevating the abdominal parietes far above the intestines, and thus separating them from each other. Here, then, would be a case of ascites without the usual physical symptoms. On percussing such a patient there would be a dull sound over every portion of the abdomen, precisely as there would be in an ovarian cyst, and, as in the latter, a change of position would not alter the percussion sounds, nor the contour of the abdomen to any appreciable extent. Fluctuation also would be the same, both in this and unilocular ovarian tumor. Paracentesis might give exit to a fluid containing a large proportion of albumen and not unlike in color certain specimens of ovarian fluid. After tapping, hard masses would be detected, resembling the multilocular deposits in the walls of ovarian cysts. These cases, thus far, resemble ovarian tumors very closely, and have not unfrequently misled the surgeon. They, however, are much more acute and violent in their character, particularly in their early stages; are accompanied by much greater febrile excitement; more constitutional disturbance; vital depression; rapid emaciation, and present a combination of more serious and grave symptoms than are usually found in the earlier periods of ovarian disease. Sometimes, though rarely, ovarian disease supervenes with very violent symptoms, and rapidly overwhelms the powers of life. But all cases marked by the above symptoms should be examined with the greatest care, and an opinion formed with the utmost caution. Indeed, as a general rule, the fair inference would be against the existence of ovarian dropsy. Here, also, the fluid will afford most important aid in the diagnosis.

In illustration of these points I will report the following cases:

a. Case CVII.—*Inflammatory deposits in the abdominal cavity mistaken for an ovarian tumor; autopsy.* February 28th, 1850, I was requested by Dr. Rufus Bicknell, of West Philadelphia, to visit Mrs. W. with him in consultation. She was about sixty years old. As she lay in bed, her physiognomy showed that she was laboring under very severe disease. For several days she had been suffering with acute inflammatory symptoms. The abdomen, particularly in the lower portion, was quite protuberant. On examination there appeared to be a well-defined tumor filling up the lower portion of the umbilical and whole of the hypogastric region, extending into both sides. It was round, smooth, almost as resisting as a fibroid tumor, fixed in position, and non-fluctuating. The superior strait of the pelvis was also occupied by a resisting substance. The uterus was low in the pelvis, and small. The sound entered it to the distance of one and a half inches.

When Dr. Bicknell called upon me to see the patient he was very confident that she had an ovarian tumor. I was not of that opinion, but still I could not diagnosticate the condition satisfactorily. It evidently was a case of inflammatory disease, which would probably soon terminate in death, but its real character I was unable to make out at that time. I did not visit the patient again.

March 13th she died, and the following appearances were revealed by a post-mortem examination: the round smooth tumor consisted of the parietal peritoneum immensely thickened by plastic deposits, beneath which there must have been, before I saw her, an accumulation of fluid, distending it into this round form; after which the fluid was reabsorbed, and, as it diminished in quantity, the plastic deposit contracted upon it into the resisting and hard mass which was found. This view is confirmed by the fact stated by Dr. Bicknell, that the fullness of the abdomen had diminished when my visit was made. Besides, large quantities of coagulated lymph enveloped the intestines, and several inches of the colon were completely imbedded in lymph an inch thick. Two portions of this abnormal peritoneum, as large and thick as the open hand, were removed and preserved as specimens. The intestines were sealed to the vertebral column in a hard mass.

b. CASE CVIII.—*Inflammatory deposits in the abdominal cavity mistaken for an ovarian tumor; preparations made for ovariotomy, but the operation not performed; subsequently an ovarian tumor was developed; autopsy.* July 1st, 1868, I visited Meadville, Crawford County, Pennsylvania, to see Mrs. L., in consultation with Dr. John T. Ray, for the purpose of performing ovariotomy. She was forty-four years old, and had several children. Dr. Ray had been called upon early in March, 1868, and found her laboring under inflammatory symptoms of an acute character, accompanied by fever, and suffering from severe pain in the abdomen, particularly to the left of the umbilicus. There was also considerable tumefaction of the abdomen. He treated her actively with calomel and opium and blistering, after which the soreness and swelling gradually diminished. Her health was very much broken down by the severity of the attack, and the abdomen continued to remain much larger than it should be. Latterly, however, it had diminished in size, and her general health had somewhat improved, so that a few days before I saw her she rode out for the first time since the attack in the spring.

When on her back in bed, with the abdomen exposed, its size was seen to correspond with that of a woman six months pregnant. As the patient was very much emaciated, and the abdominal walls greatly attenuated, the outlines of the intestines were plainly visible. The tumor could be seen and felt in the lower portion of the abdomen between the umbilicus and pubes. There was resonance on percussion at every point except immediately over the lower portion of the tumor, while over its upper part the percussion sound was semi-resonant. The tumor was non-fluctuating, non-elastic, moderately hard, and uneven, very slightly movable, and its upper portion seemed to adhere to and coalesce with the intestines. The os tincæ was patulous, and admitted the sound two and a half inches. When the sound was in the uterus, all motions given to the tumor were communicated to the instrument, and, conversely, when the latter was moved an impulse was transferred to the tumor; which seemed to indicate that the fundus of the uterus was imbedded in the lower part of the tumor. In some of the folds of the intestines hard masses could be distinguished. The intestines were unusually distended and easily traceable beneath the thin wall of the abdomen.

The diagnosis was: no disease of the ovary existed, and the mass consisted of inflammatory deposits, resembling a tumor. No surgical interference was required. All the usual preparations for an operation had been made, the hour fixed, and the physicians present. By judicious treatment, the patient so far recovered as to enjoy pretty good health. The inflammatory deposits were gradually absorbed, and the abdominal enlargement disappeared.

Some time after her recovery from the effects of this acute attack, a tumor again began to develop itself, and progressed to a large size, which caused her death November 21st, 1871. Dr. Ray made a post-mortem examination. About six pints of bloody serum escaped from the peritoneal cavity, and a multilocular ovarian tumor weighing eighteen pounds was removed from the left side of the uterus. The pedicle was about the size of the little finger and the adhesions very slight.

On visiting Meadville this winter, 1872, I examined the tumor. It was multilocular, composed of a great many small cysts, none exceeding a pint measure in size.

The foregoing case is interesting from the fact that in 1868 the patient was the subject of acute inflammation, which resulted in the production of plastic deposits resembling an ovarian tumor. These deposits were afterward removed by absorption. The previous inflammation, however, no doubt had extended to the left ovary, and caused its subsequent enlargement.

c. CASE CIX.—*Inflammatory deposits in the abdominal cavity, followed by the development of a multilocular ovarian tumor; autopsy.* May 16th, 1858, I visited Mrs. P. R. H., in consultation with Dr. R. Bicknell. She was forty-two years old, and first menstruated at the age of fifteen years. She was regular until the age of eighteen, when menstruation was suspended for six months; and during this time she was bled twice a week, until she became extremely weak. The menses returned, and were regular. They were always painful up to the time of marriage. She married at the age of twenty-eight, had three children, all at the end of seven months' gestation.

In August, 1857, she was seized with pain in the right inguinal region, lasting several hours, which she described as dreadful, and which was followed by great prostration. This attack was succeeded by an enlargement of the abdomen. At different periods afterward she had similar seizures, and the abdomen became greatly enlarged, and so tender that she could not bear the slightest touch.

After the severe illness in August, the menses became very scant and of short duration, and were suspended entirely the last two periods.

On examination I found the abdomen as large as a woman at the full period of gestation, dull on percussion, except in the epigastrium, and indistinctly fluctuating. The walls of the abdomen appeared to be thickened, or occupied by pseudo-tumors, and exceedingly sore to pressure.

Diagnosis.—Inflammatory deposits.

June 3d.—I again visited her with Dr. Bicknell. The enlargement and soreness of the abdomen had both disappeared. There was a resonant sound over the whole abdomen, except in the lower part of the left inguinal and hypogastric region, where the percussion sound was semi-resonant. These regions were more resisting to pressure, showing the presence of some firm deposits. The uterus was in place, movable, and not sore to the touch.

July 12th.—I saw the patient again. Her abdomen was larger, but her general health better. There was no abdominal tenderness. The resonant sound was confined to the epigastrium, and there was indistinct fluctuation, with four or five small floating tumors.

August 9th.—The abdomen had increased in size very much, and had assumed most of the characteristics of ovarian dropsy. The percussion sounds were the same. General health much improved.

August 18th.—The increase in size had become so great as to cause much suffering from the distention. She desired to be tapped. I passed the trocar through the linea alba four inches below the umbilicus, fortunately passing it in between two tumors, and drew off fifteen pints of straw-colored, transparent fluid. It escaped through the canula pretty freely, but was occasionally interrupted by something within the abdominal cavity. As the fluid escaped, prominences appeared here and there, showing the locality of different tumors. After the fluid was removed, the abdomen remained considerably enlarged. This enlargement was quite irregular, made up of several distinct masses, all more or less movable, except one in the right inguinal region, which was fixed in its position. The several tumors had an elastic feel, and appeared to consist of an aggregation of ovarian cysts. After the operation, the patient complained of pain in the epigastrium.

The fluid was examined by Dr. Drysdale, who reported as follows:

"A thin, transparent, deep straw-colored fluid.

"*Chemical examination.*—Alkaline. Specific gravity 1020.

"*Microscopical examination.* — Cholesterine, old epithelial cells, scales and masses of fibrin floated in a clear fluid. Some of the epithelial cells contained a brown pigment."

I may add to the above that heat coagulated the fluid.

The diagnosis then was: ascites, with multilocular ovarian tumor.

August 21st.—The patient became quite comfortable after the tapping, although the fluid reaccumulated rapidly. The wound reopened the day after, and gave exit to a large quantity of the fluid, and it was still escaping at the time of my visit. The intestines then occupied the whole left side, and the tumors the right, and the several masses were still movable. There was very little soreness to pressure. The uterus was crowded back, its os open enough to admit the point of the finger. In front of the uterus the pelvis was occupied by the lower portions of the tumor filling up the superior strait. The posterior wall of the vagina was greatly relaxed, protruding through the os externum, and forming a distinct empty sac. This, the patient says, was, before tapping, a firm mass as large as her two fists, which disappeared afterward. The sound entered the uterus over three inches, and retained a central position. The uterus and tumors were not connected.

August 24th.—The patient was suddenly seized with extreme pain in the right side, accompanied by great distress throughout the abdomen. This was succeeded during the night by excessive vomiting of a dark-green fluid and great prostration. Next morning early I found her in a state of collapse,—pulse imperceptible; skin cold, clammy, and purplish about the hands and wrists; breathing accelerated; great distress in the præcordial region; and some tympanitic distention. As she had passed no urine for twenty-four hours and had extreme pain in the region of the bladder, I introduced the catheter and removed about six ounces of dark-colored urine. In spite of treatment, she died at three o'clock P.M.

Five hours afterward Dr. Drysdale made an examination of the body in the presence of Dr. Bicknell and myself. On opening the abdomen, six or eight pints of fluid were sponged from the cavity. It was similar to that removed by tapping, but stained with a gelatinous whitish substance; deep in the right side of the pelvis was a large collection of stringy, pus-like fluid, which was traced coming from an opening in one of the cysts on the same side. Every part of the abdominal cavity and its contents—the intestines, the tumors, the parietes—all had a dark-red, mottled, granular appearance. The whole lower portion of the abdomen, extending to about three inches above the umbilicus, was occupied by a multilocular ovarian tumor, attached by its pedicle to the left side of the uterus. Very strong old adhesions sealed the tumor in the right inguinal region. Old and recent adhesions also existed between the tumor and omentum. Three hydatid-like cysts, one as large as a pullet's egg, were attached to the right side of the pelvis. The tumor filled up the pelvis, occupied the recto-vaginal cul-de-sac, and was extruded beyond the vulva back of the uterus.

The tumor weighed nine pounds. In some parts of it there were bony deposits, and in others it appeared to be flesh-like. Some of the cysts were lined with fibrinous layers of a white color, and two to four lines in thickness, looking like coagulated albumen.

In reviewing the origin and progress of so complicated a case, it is very difficult, perhaps impossible, to explain all the symptoms associated with it. It commenced suddenly with acute symptoms of peritoneal inflammation, followed rapidly by plastic deposits and serous effusion, which disappeared to a great extent under active treatment. This inflammation, having extended to the left ovary, caused its rapid enlargement, accompanied by a return of the ascitic effusion. And finally, just when the patient was improving in general health and becoming more comfortable, one of the ovarian cysts broke, and, discharging its contents into the peritoneal cavity, caused immediate collapse and death.

The above case illustrates a point of interest heretofore alluded to: the difficulty, at times, of deciding which ovary is affected. The early history of the case, and the condition of the abdomen after tapping, almost positively indicated that the right ovary was implicated, while the post-mortem examination showed that the left ovary was affected. The left ovary had evidently been tilted over into the right inguinal region, and was then sealed there by inflammatory adhesions.

d. Case CX.—*Inflammatory deposits in the abdominal and pelvic cavities, occurring one year after ovariotomy; autopsy.* This patient was Miss H. O., aged twenty years, from whom I had removed the left ovary in September, 1867. The operation and recovery were both extraordinary. The details of the case may be found under Chapter XXII., numbered CXXXVI., and should be read in connection with the present report, as having some bearing on the conditions here described. At the time of the operation, the remaining ovary was examined and pronounced healthy.

Having received several letters, expressing fears that Miss O. had a return of her disease, I visited New York, December 30th, 1868, and saw her in consultation with Drs. Anderson, senior and junior, and Profs. Peaslee and Elliott. It appeared that in June she went to a picnic in the country, and was on the damp ground for about an hour, when she was seized with a chill and cramps in the bowels, which were followed by a severe attack of acute peritonitis. In September she had another attack of peritonitis, after which Dr. Anderson noticed a fullness in the lower part of the abdomen, and feared that another tumor was being developed. This state of things continuing, led to the above consultation.

The whole lower portion of the abdominal cavity was occupied by a hard, sensitive mass,—the right side of it not so sensitive to pressure as the left. It was very slightly movable. The os tincæ was central, the cervix short, and the sound entered the uterus over two inches, and went directly up to the lower end of the cicatrix left by the operation of ovariotomy, which led me to think that it entered the Fallopian tube. At this point an escape of blood took place at every menstrual period. The fundus of the uterus seemed to be imbedded and fixed in the solid mass above it. The superior strait of the pelvis was also occupied by the tumor.

All the gentlemen present agreed that the tumor was neither ovarian nor uterine, but an inflammatory deposit, and that it ought to be treated by medication.

March 30th, 1869, I visited New York again, and another consultation was held. The enlargement had increased on the left side and diminished on the right; and percussion elicited a semi-resonant sound, as if the solid mass was beneath the intestinal canal. Flatus also could be felt by the hand moving through it. The superior strait of the pelvis was more free.

The diagnosis was confirmed.

After this visit I heard nothing more of the case until August, and then incidentally learned that the patient was dead. I immediately wrote to Dr. Anderson for the remaining history of the case, and received the following reply:

"After your last visit with Dr. Peaslee, she seemed rather encouraged, but without any indications of improvement, but rather a darkening of prospects, a gradual increase of constitutional disturbances, sweats, irritable stomach, red tongue, no appetite, loose bowels, etc. The swelling of the abdomen did not much increase, but became rather softer, with a kind of doughy, heavy fluctuation, which became more fluid and distinct, with general tenderness of the abdomen from the umbilicus down. Dr. Peaslee saw her once after you left, but all we could do had no beneficial effect. She sank gradually under the aggravation of the above symptoms: her tongue and mouth became loaded with petechiæ as in the last stage of phthisis, though there were no prominent lung troubles.

"The post-mortem, as recorded by my son and Dr. Bundle, was as follows: abdomen mottled, emaciation not marked, fluctuation on *both sides.* Peritoneal fluid very offensive. Intestines filled with gas. Fluid in abdomen one quart, varying from cloudy serum to dirty pus. Also thick pus in the lower portion of the abdomen. Peritoneum thickened and roughened from effusion of lymph. Intestines dark blue, displaced upward. Tumor about as large as a medium-sized cocoanut, very firm over the anterior surface, also adherent anteriorly to the intestines, being easily broken up by means of the fingers. The tumor lay somewhat to the left of the median line, reaching up to about one inch of the umbilicus. The uterus was removed, for the purpose of examination, at the junction of the body and neck, and the tumor was detached at the junction of the attachment to the commencement of the rectum. This left a tolerably clean cavity. Examination of the tumor after its removal showed it to be much decomposed, resembling somewhat, in general appearance, a boiled cauliflower, of varying consistence; in some parts quite firm, in others almost diffluent, and its substance filled with thick pus (it looked very much like a large cauliflower well boiled, partly broken up, and well supplied with butter-sauce). It rose by a pedicle about one inch in diameter from the left angle of the uterus, and included the Fallopian tube and broad ligament. On the right side was a translucent tubal cyst about as large as a hen's egg. The uterus was small and of healthy texture.

"This is the rough sketch taken at the time, and not put in proper shape since. The cauliflower substance was put under the microscope. I have the drawing. My son and Dr. Bundle are both out of town, and I cannot give the particulars."

I subsequently wrote to Dr. Anderson, Jr., but have never received any further account of the case.

CHAPTER XVII.

PELVIC TUMOR AND ABSCESS.

Under this head, I wish to speak of tumors unconnected with the uterus or ovaries. The source of these tumors may usually be found in hemorrhages or inflammatory deposits occurring in the areolar tissue surrounding these organs, induced generally during parturition. Pelvic tumors may also be the result of violence during the non-pregnant condition. They may also occur under certain conditions from cold, and from the incautious injection of irritating substances into the uterine cavity, which, following the course of the Fallopian tube, may kindle up acute inflammation in the pelvic peritoneum and parts adjacent. These tumors are, generally, more or less acute in character; are accompanied by fever and considerable constitutional disturbance; and are much more painful on manipulation than is usual either in uterine or ovarian tumors. The patient commonly is disabled, and forced to keep her bed; loses her appetite; the temperature of the skin is increased; the pulse accelerated; and all the symptoms of acute disease exist. The tumor, particularly in its early period, is hard and very sensitive; the parts heated; and micturition and defecation sometimes difficult and painful. After some time, the tumor may grow softer, become more elastic, more painful, the constitutional symptoms become more aggravated, accompanied by rigors, and an abscess result, which, upon being discharged, is followed by great relief to the patient, and, generally, by restoration to health. When recovery takes place, the deposits constituting the walls of the abscess, after the contents are discharged, are slowly absorbed and disappear.

a. CASE CXI.—*Pelvic tumor suddenly appearing two hours after delivery, and terminating in abscess.* December 19th, 1858, I was requested by Dr. C. Osler to visit with him Mrs. R. P., aged twenty years, who had "an anomalous tumor-like something" in the left sacro-iliac region of the pelvis. About two months before my visit, Mrs. P. was confined with her first child, had a very easy labor, passing through all its stages without any unusual symptoms. Two hours after delivery Dr. O. was sent for, and found her suffering the most excruciating agony in the lower part of the body, which could only be alleviated by large doses of opium. After the effects of an anodyne subsided, the pains returned, and were again subdued in the same way. An examination disclosed a very sensitive, hard tumor in the sacro-iliac region, which was not noticed during the labor. This state of things continued for a considerable time, and terminated in a sudden discharge of blood and matter, which afforded immediate relief. Previous to this event, she had great difficulty with the bowels. She was obstinately constipated, the fæces were dry, and defecation difficult. Since then the bowels have been rather relaxed, and the rectum becomes prolapsed during the discharge, as well as at other times. Recently, Dr. O. made another examination, and found a tumor still occupying the same situation, and Dr. B. Janney having seen the patient with him, they desired my counsel.

I examined the patient, and could detect a tumor, as large as a small orange, occupying a position near the left sacro-iliac junction, and between the rectum and vagina. It was tolerably firm, but not as hard as a uterine fibroid tumor, semi-elastic, and sore to pressure. Comparing the history with the present condition of the tumor, I diagnosticated it as the remaining walls of a discharged abscess, and explained its origin and the subsequent symptoms on the supposition that the pressure of the child's head, in the act of parturition, had ruptured one of the pelvic vessels, which, discharging blood into the cellular tissue, had, by over-distention, caused the extreme suffering; that subsequent inflammation and suppuration had followed; and that the abscess had discharged, leaving the inflammatory deposit or wall of the abscess, to constitute the present tumor. Of course, the patient ultimately got well by the natural process of absorption.

b. Case CXII.—*Pelvic tumor suddenly appearing independently of parturition, and terminating in abscess.* February 18th, 1865, I visited Mrs. J. McD., at Dover, Delaware, in consultation with Dr. J. C. Bird. She was about twenty-six years old, had one child five years before, and two miscarriages afterward. Menstruation was regular until August, 1864. The next return was in two weeks, and an irregular discharge followed. In December she had a sudden attack of extreme pain in the lower part of the abdomen, followed by very great soreness, particularly in the right inguinal region. A few days after she had difficulty in defecation, accompanied by purulent discharge from the bowels, resembling the contents of an abscess. She was relieved by that discharge, but continued to be sore, and larger than usual.

She was considerably emaciated and pallid. The hypogastric region was somewhat protuberant. There was resonance on percussion everywhere, except above the pubes, which was semi-resonant, and soreness on pressure over the whole lower portion of the abdomen. A rather circumscribed hardness was perceptible above the pubes, not like that of fibroid tumor, but more resembling that of inflammatory deposits. It was immovable. The cervix uteri was indurated and tender. The uterus was *in situ*, and scarcely movable. Anterior and to the right of it, the pelvis was occupied by a portion of the same tumor that was felt above the pubes. The speculum revealed an inflamed os tincæ, and the orifice, which resembled that of a virgin, was filled with a gelatinous viscid substance. The sound entered three inches, caused pain, and its removal was followed by a bloody, tenacious discharge.

The suspension of menstruation in August, and the irregular red discharge afterward, with the sudden attack of extreme pain in December, rather strongly indicated extra-uterine fœtation, and a rupture of the ovum. As the patient, however, had not increased in size previous to this attack, and had no suspicion of pregnancy from any of the usual accompanying symptoms following the cessation of the menses, I diagnosticated the case as one of plastic deposits, caused by previous pelvic cellulitis and abscess, and associated with endometritis. Of course, this state of things may have been set up by the rupture of the cyst of an extra-uterine fœtus. Prognosis: ultimate recovery.

c. CASE CXIII.—*Pelvic tumor, following parturition, mistaken for an ovarian tumor.* October 7th, 1868, I received a letter from Dr. F., of New York, requesting me to visit that city prepared to operate on Mrs. J. J. R. He wrote:

"The case is a peculiar one. I am almost inclined to think it cancerous, but do not find the characteristic symptoms of it. In March last she was confined, after which this tumor appeared on the left side and seems to be ovarian from its position; not very large. She suffers great pain, and tenderness on pressure. The muscles, extending from the inside of the thigh, are tense; the leg she draws up, but I think she does it to relieve pain. It is the left leg. During her menstrual period she would sometimes *flood* terribly."

October 23d, I visited New York, and saw the patient with Dr. F. She was forty-four years old, had six children in nine years, the youngest nine months old. The attack commenced immediately after the birth of this child. Until this disease occurred, she enjoyed good health, was fleshy, and weighed one hundred and sixty pounds. When I saw her she was greatly emaciated, tongue red and chapped, mouth sore, and she had the usual symptoms of stomatitis. She suffered the most intense pain in her left hip and leg, and obtained no sleep without anodynes. The left limb was drawn up and swollen.

When on her back, no perceptible enlargement of the abdomen could be seen, but a tumor could be felt deeply seated in its lower part, inclining to the left side. It was very hard, nodulated, sore on handling, scarcely movable, and dipped into the left side of the pelvis. The uterus was crowded to the right side of the pelvis; the sound entered with some difficulty three and a half inches, caused pain, and could be felt two inches above the pubes on the right of the linea alba. The hard, nodulated tumor was readily detected in the pelvis, and appeared to originate from the pelvic bones on the left side near the sacro-iliac junction, involving the nerves and vessels so as to cause both pain and swelling. The pelvic portion of the tumor was entirely immovable, and fixed to the bones. The examination caused great pain.

Diagnosis.—Malignant periosteal tumor; incurable. The patient demanded an operation, which, of course, could not be acceded to.

Dr. F., in a letter dated December 18th, 1868, says: "I write to inform you that Mrs. R. died on Tuesday morning last (December 15th) suddenly. I could not get a post-mortem examination. Several days previous to death she had slight hemorrhages from the rectum."

d. Case CXIV.—*Pelvic tumor arising from a rupture of the pudic artery during parturition.* October 11th, 1857, at five o'clock P.M., I visited Mrs. R., in labor with her first child. The vertex presented, the os was open to the size of a silver dollar, and dilatable, the parts were moist, the perineum was dense, the rectum loaded, and the labia, particularly the right one, tumefied. The rectum was emptied by an enema. Labor was satisfactorily terminated at eight o'clock P.M. The perineum was uninjured.

Immediately after the birth of the child, the patient complained of intense burning pain in the pudendum, which I supposed was the ordinary soreness following a first confinement, and for which I ordered an opiate and some soothing local application. About two o'clock next morning I was summoned to her bedside in consequence of excessive suffering and considerable hemorrhage, which had alarmed the nurse. Upon examination, I was surprised to find a large tumor bulging from the inferior strait of the pelvis. It was excessively sensitive, very firm, and resembled the tumor formed by the head of the child, during the parturient efforts, when covered by an attenuated and distended perineum. It was some time before I could make out the real condition of things. I at last discovered that the pelvis was completely occupied by a tumor, enveloped by the right labium and right wall of the vagina, and so tightly impacted that it was difficult to insert the finger alongside of it. A longitudinal rent, parallel to the ischio-pubic ramus of the pelvis, three or four inches in length, was next detected, and from which blood was constantly flowing. On passing my finger through this rent and probing the interior, I found a large cavity occupied by a dense coagulum of blood, which I broke up and removed to the amount of at least one quart. This was followed by a collapse of the distended walls, and by great relief to the patient. Blood continuing to ooze from the cavity, lint, saturated with astringents, was introduced, and a compress with a T-bandage applied. The bleeding gradually diminished, and ceased altogether in about twelve hours after.

I am at a loss to explain this rare accident. The external organs of generation were considerably swollen on the accession of the labor, particularly the right labium pudendi. In the progress of labor, as the child's head filled up the cavity of the pelvis and impinged against the swollen parts, their tension increased, and the tissue, instead of relaxing and expanding, was ruptured in the line of greatest pressure, which was between the head of the child and the ramus of the ischium. Or perhaps the soft parts were so caught between the ramus and child's head as actually to be cut by the edge of the former. In either case, the pudic artery or one of its branches was lacerated, and, pouring out its blood into the areolar tissue, a sudden hæmatocele was the consequence.

CHAPTER XVIII.

SPINAL CURVATURE, LUMBAR OR PSOAS ABSCESS.

Spinal curvature, lumbar or psoas abscess, are placed under one head, as they are dependent on a diseased condition of the spinal column. They have been mistaken for ovarian tumors, as in the course of their development irregular enlargements have occurred in the abdominal and pelvic regions assuming some of the characteristics of an ovarian cyst. In these cases, the limb of the affected side is usually flexed; the tumor is fixed, becoming, after a time, elastic and fluctuating, tense in an erect posture, but more relaxed when recumbent; exercise is irksome and painful, and the general health broken down. The chief resemblance to an ovarian cyst is in the location and fluctuation of the abscess.

Case CXV.—*Extensive lumbar abscess mistaken for an ovarian tumor; tapped.* January 26th, 1866, I visited Mrs. C. S., near Kimberton, Chester County, Pennsylvania. She was forty-three years old; first menstruated at the age of sixteen, continued to be pretty regular, but suffered excessive pain. She married at the age of twenty-five, but never conceived. After marriage she became irregular. In August, 1865, she had her last menstrual flow, at which time she began to feel unwell. In the latter part of November she discovered a hardness and soreness in her left side, and sent for her physician, Dr. J. Wells, who, believing it to be an ovarian tumor, referred her to me. Dr. Isaac Kauffman, of Phœnixville, who examined the case, coincided in this opinion.

The abdomen was not much altered in shape. It was resonant on percussion over the right side, and dull over the left. The pelvis was free. The uterus was to the left of the median line, and admitted the sound three inches, which caused pain. A tumor could be felt occupying the left side, embracing the left lumbar, left inguinal, lower part of the left hypochondriac, and left sides of the umbilical and hypogastric regions. It was sore to pressure, smooth, semi-elastic, and immovable. The wall of the abdomen could not be lifted from or made to slide over the tumor, but appeared to be adherent to and incorporated with it, although the integuments glided freely over the abdominal muscles. The left leg was retracted. At times she suffered severely from shooting pains, which required the free use of opiates. She kept her bed, and had considerable constitutional excitement, the pulse being over 120.

Diagnosis.—Extensive lumbar abscess.

February 7th, Dr. Wells sent for me again. Decided evidences of fluctuation existed; the suffering was great, and all the symptoms were aggravated. Selecting a point midway between the left superior spinous process of the ilium and the umbilicus, I punctured the abdominal wall with a small trocar. The instrument traversed about one and a half inches of tissue before entering the cavity of the abscess, and was immediately followed by a strong jet of purulent fluid, having a greenish tinge, and an odor of sulphuretted hydrogen. Nearly two quarts of fluid escaped. The tension, size, and soreness of the abdomen were greatly diminished, affording immediate relief to the patient. She could take a deep inspiration for the first time for a long period, and she assumed a recumbent position, which she had been unable to do for a week, being forced to sit up all the time.

March 9th, I visited her again. She had been getting along satisfactorily until one week before my visit, when a change took place, after which she began to sink, and died on the 5th of April, 1866. No autopsy.

CHAPTER XIX.

MALIGNANT TUMORS OF THE ABDOMEN.

Not unfrequently tumors of a malignant character are developed in the pelvic or abdominal cavity, which in their progress assume many of the characteristics of multilocular ovarian tumors. If the surgeon has an opportunity of examining them at an early period of their history, he may, from their locality alone, often decide their character,—as, for instance, should they originate at a point of the abdomen distant from the pelvis, and at the same time be free from any direct connection with any of the pelvic organs. If their origin, however, be in the pelvis, or in the lower part of the abdominal cavity, the differential diagnosis will then become much more difficult. Should the surgeon be less fortunate, and not see the case until the cavity of the abdomen becomes filled by the tumor, he will often find many points of similarity between it and certain forms of ovarian disease. Like an ovarian tumor, it will have pushed away the intestines from their usual natural positions; it may have an irregular and nodulated surface; it may be elastic in certain portions, and resisting in others; tremulous, and even fluctuating on percussion throughout the whole or portions of its extent; and, in addition, it may sometimes yield fluid by being tapped. Usually, however, tumors of this kind, in their early period, and indeed at all times, are less movable than ovarian tumors, progress more rapidly, and, as they increase, produce much more decided and profound cachexia; and throughout all their stages are accompanied by greater tenderness, acute pain, and more constitutional disturbance.

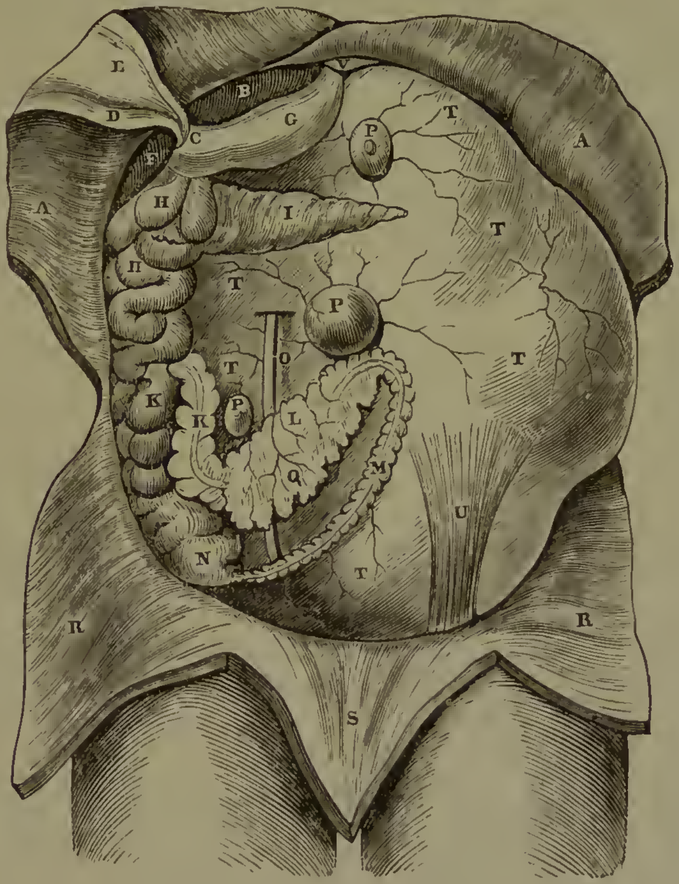
a. Case CXVI.—*A malignant tumor of the abdomen, originating from the lumbar vertebræ, and resembling an ovarian tumor; au-*

topsy. This case may be found reported in detail in the *American Journal of the Medical Sciences* for April, 1844, p. 296. March 29th, 1842, I was called to see Miss C. H., aged thirty-one years. Menstruation commenced at the age of fifteen, continued one day, was checked by imprudence, and returned after an interval of five months, after which it appeared regularly every three weeks until July, 1841, at which time it ceased altogether. In the spring of 1840 she began to experience neuralgia in the left side and left thigh, accompanied by a lateral inclination of the body toward that side.

During the following July I observed an unusual fullness of the false ribs of the left side near their angles, which I then attributed to malposition in consequence of spinal curvature. A manifest increase of this fullness occurring in a few days, I made a more particular examination. Placing the patient in an easy position upon her back, and making deep pressure upon the relaxed parietes of the abdomen, I discovered a tumor within, pressing up against the diaphragm in the posterior and superior part of the left hypochondriac region. The tumor increased with astonishing rapidity, pushing out the whole arch of the left lower ribs, and soon presenting itself beneath them, assumed a position on the left side similar to that usually taken by an enlarged liver on the right. It rapidly increased, and finally filled up the lumbar space between the ribs and crest of the ilium, greatly distending the lumbar muscles posteriorly, occupying the whole left side, projecting laterally and anteriorly to a considerable extent, filling up the left iliac fossa and dipping deeply into the cavity of the pelvis, and extensively encroaching on the right side,—thus filling up nearly the whole abdominal cavity, and crowding the viscera over to the right. The tumor had an irregular, nodulated surface, was immovably fixed, and possessed little sensibility. A peculiar elastic, semi-fluctuating sensation was imparted to the touch. She died September 30th, 1842.

Autopsy twelve hours after death. The *liver* was very much compressed by the tumor, and the *stomach* was crowded into the right side of the epigastric region. The *ascending colon* commenced in the right lumbar region, soon curved downward toward the right inguinal region, where it met the *transverse colon*, which, ascending obliquely upward to the umbilicus and a little above it, took the form of the *descending colon* by a sudden flexure, passing obliquely downward, across the tumor, and dipping into the pelvis behind the right pubic bone. The *small intestines* were crowded into the right side. The tumor, having originated from the spine entirely behind the peritoneum, had changed the normal reflections of this membrane. The omentum contained three small medullary tumors. The tumor occupied the hypochondriac, lumbar, and inguinal regions of the left side, the hypogastric and umbilical regions, most of the epigastric, part of the corresponding regions of the right side, and dipped deeply into the pelvis. The *spleen* was in its normal position, but adherent to the tumor. The *pancreas* was forced forward against the anterior wall of the abdomen, and bound closely to the tumor. The *left ureter* escaped from the right side of the tumor and was stretched over the lower part of it. The *right ureter* was still more toward the right and also in front. The body of the *left psoas muscle* was incorporated with the tumor, and its tendon was pushed forward against Poupart's ligament. The tumor was strongly attached to everything it touched, and it was almost impossible to effect its removal, and while attempting it a sac was ruptured, and two or three pints of fluid escaped. After it was removed, the lower false ribs were found denuded and roughened; the bodies of the three lower vertebræ were entirely disintegrated by medullary matter, and were so soft that the finger could be pushed through them; their lateral processes on the left side were denuded and roughened. The intervertebral substance was sound. The ligaments of the vertebral column, and of the ribs, the tendons, and the white fibrous tissue generally, in contact with the tumor, were normal. The mesentery of the right side was very much thickened. The mesenteric glands were enlarged. The stomach and liver were small, but healthy in appearance. The gall-bladder was full. Attached to the tumor, after its removal, were the spleen, pancreas, descending colon, and left ureter; embodied within the tumor were the left kidney, the left crus of the diaphragm, and the left psoas muscle. Its weight was fourteen and a half pounds. It was medullary in character. See Fig. 24.

Fig. 24.



The figure represents the appearance presented when the parietes of the abdomen were divided and the flaps turned aside.

A, A. The two superior flaps of the abdominal parietes turned over the border of the chest.

B. The left lobe of the liver.

C. The cleft on the anterior margin of the liver.

D. The round ligament of the liver.

E. That part of the falciform ligament which is attached to the abdominal parietes.

F. The right lobe of the liver.

G. The stomach.

H, H. The small intestines.

I. The pancreas.

K, K. The ascending colon.

L. The transverse colon, partly seen through the thin anterior layers of the great omentum.

M. The descending colon.

N. The sigmoid flexure.

O. The left ureter, emerging from the body of the tumor.

P, P, P. Encephaloid tumors of the peritoneum.

Q. A portion of the great omentum. The greater portion of the omentum was expanded over the tumor between the stomach and transverse colon, and was considerably attenuated.

R, R. Lateral flaps of the abdominal parietes.

S. An interior and inferior flap.

T, T, T, T, T, T. The anterior portion of the great encephaloid tumor.

U. The tendon of the left psoas muscle. Its muscular fibres are incorporated with the tumor and degenerated into the same kind of morbid structure, while its tendinous portion retains its integrity, and is forced forward against Poupart's ligament.

V. The xiphoid cartilage.

In reviewing the principal features of the above case, particularly at the latter period of its history, many points of similarity will be noticed between them and those of multilocular ovarian tumors. The varying resistance of the surface of the tumor,—some places elastic and semi-fluctuating, others harder and nodulated; the intestines crowded to the right side; and the tumor apparently rising out of the pelvis into the left side, all point to such a resemblance. Ovariotomy has been performed in cases offering less grounds for a correct diagnosis than this singular case.

b. Case CXVII.—*Colloid tumor of the abdomen mistaken for ascites, and also for ovarian dropsy; tapped, removing a substance resembling calf's-feet jelly; death five days after.* The following letter was received from Dr. Jacob Richebaugh, Chester County, Pennsylvania:

"March 24th, 1850.

"Dear Sir,—A patient of mine (Mrs. B. R. S.) has been afflicted with ascites for some three months past, and I have been unable to render her any assistance or benefit by the employment of most of our active diuretics and alteratives, such as nitre, digitalis, squill, and calomel. Despairing of success, I join with the family of the patient in requesting your professional assistance in the case."

I visited the patient on the 26th. She was between fifty and sixty years old, had been confined to bed four weeks, and dated the commencement of her disease from January. She was much larger than a woman at full period of gestation, uniform in shape, and all the characteristics of a unilocular ovarian tumor were present. Fluctuation was distinct, but gave the impression of a thick, heavy fluid.

As the time of my visit was limited, I did not extend the examination further. The object of my visit, at that time, was merely to afford temporary relief, and, as I considered it to be a clear case of ovarian dropsy, I proceeded to tap her. I passed a large trocar well into the supposed cyst, but no fluid escaped. Surprised at this, I introduced through the canula a female catheter, but with no better result. In doing this, however, I noticed that by moving the catheter about I could break up a delicate network within, and detach a singular jelly-like substance, some of which I succeeded in getting away. It exactly resembled, in consistence, color, and peculiar elasticity, the calf's-feet jelly of the confectioner. Only about one tablespoonful was removed.

This was the first time I had ever met with such a substance, and, believing it to be one of the many kinds found in ovarian cysts, I did not alter my diagnosis.

The case being evidently a very acute one,—of only three months' duration,—the patient cachectic, the powers of life rapidly succumbing, and paracentesis affording no relief, I informed her that a surgical operation for the removal of the tumor afforded her the only chance of life. To this she immediately assented, and preparations were made to have her removed to Philadelphia for that purpose.

April 1st, I received the following note from her son:

"March 31st, 1850.

"DEAR SIR,—I write to inform you of the sudden and fatal termination of mother's disease. She died to-day about twelve o'clock; and as it was her desire to have an examination after death, and as she was to be placed to-morrow under your care, I feel that we owe a duty to you and to the profession to advise you of the post-mortem examination, which will be held any time to-morrow that will suit your convenience, should you come up."

The letter having been received too late to enable me to make a visit on the day appointed, I of course did not get there, and I believe no autopsy was made.

For a considerable time after the death of this patient, I had looked back upon the case as one of ordinary ovarian tumor of an acute character, and which ought to have been relieved by ovariotomy. Subsequent experience, however, taught me that it was not a unilocular tumor of the ovary, but that it was a *colloid tumor* of the abdomen, and, although in all its characteristics it strongly simulated ovarian dropsy, yet it may not have had any relation with the ovary itself. Had she lived to have undergone an operation, I have no doubt that the removal of the tumor would have been impossible.

c. CASE CXVIII.—*Colloid tumor of the abdomen resembling ovarian tumor; tapped; a substance removed looking like calf's-feet jelly; exploratory operation; death on the fifth day; autopsy.* September 26th, 1857, I visited Mrs. A. W., aged forty-three years. She first menstruated at the age of fourteen, after which the menses were suspended for six months, and then returned regularly, lasting thirty-six hours. She married at the age of twenty-four, and had six children, the youngest being six years old. She nursed her children fifteen months, but the menses usually returned in one year after parturition. She had the last menstrual period six weeks before.

April, 1856, she had an attack of varioloid, and May following she noticed a swelling in a central position just below the umbilicus. This increased in size while her health declined, and when I saw her she had been confined to bed for fourteen weeks. A number of physicians had been treating her for ordinary dropsy.

The patient was much larger than a pregnant woman at full period. The shape of the abdomen was uniform. Percussion was dull over the whole left side, resonant over the right, and semi-resonant, or even less so, over the epigastrium, which point also was more solid and resistant to pressure. It was quite elastic and fluctuating over the left side and below the umbilicus. The pelvis was occupied by a resisting, irregular mass, in the centre of which, and constituting a part of it, was the uterus, whose os and cervix were enlarged and indurated. The os admitted the point of the finger, but the sound entered only three-fourths of an inch. The finger in the rectum passed up behind an indurated, irregular mass in the vagina, which was immovable. The pelvic contents resembled scirrhus, and were impacted in the cavity.

September 28th, assisted by Dr. Drysdale, I passed a large trocar into the substance of the tumor, but not a drop of fluid escaped. The uterine sound was then introduced through the canula its whole length, and carried round the interior, so that its end could be felt, at different points, against the parietes of the abdomen, not only over the whole left side, but even over the resonant points of the right side. This fact warranted the inference that the resonance in the right side was either owing to air imprisoned in that portion of the cyst, which was a very remote possibility, or that there was no cyst, and that the accumulation of thick fluid was in the cavity of the peritoneum, crowding the intestines to the right side. By means of the sound I succeeded in removing through the canula a yellowish substance, exactly resembling calf's-feet jelly, and also a few drops of thin fluid, the latter coming from the right side.

After this exploration, I decided that the disease was *colloid* cancer, and necessarily fatal, no matter what treatment might be instituted. She was greatly emaciated, anæmic, cachectic, and feeble; had a weak, frequent pulse, red, aphthous tongue, and suffered great distress and oppression, with almost constant vigilance and restlessness.

October 5th.—The patient had no unpleasant symptoms traceable to the operation performed; but she had enlarged rapidly, and there was less resonance over the right side. She was slowly sinking,—pulse 128, and very feeble, with great distress from pressure in the epigastric region. Her great agony caused her to appeal strongly for relief.

With the view of easing her extreme suffering, I administered an anæsthetic, and, assisted by Drs. Drysdale and

Fleming, I made an opening through the linea alba about two inches long. After penetrating the abdominal wall, I encountered a layer of spongy tissue half an inch thick, which seemed to be incorporated with, or closely adherent to, the parietes. This layer was very fragile. I had expected, after making an opening of such extent, to see the jelly-like contents freely escape, but was disappointed. I then introduced the index-finger, and discovered that the large gelatiniform mass was intersected by very delicate membranous divisions, which could readily be broken up. This peculiar structure reminded me of the hyaline membrane of the vitreous body of the eye. Here and there were strong bands traversing the interior, from which these fragile septa seemed to spring. Sometimes the cells assumed the form of perfect cysts imbedded in the mass. After breaking up the whole structure within reach of the finger, the brittle jelly began to escape; but still it was difficult to remove, because it had no tenacity and could not be pulled out, although small particles were quite adhesive to the finger. Upon the removal of three or four pints, ragged ends of the tougher portions of membrane, which had been torn across by the finger, began to extrude through the opening, with occasional masses of jelly surrounded by the delicate and more easily ruptured membrane. By constant manipulation with the finger in the cavity of the abdomen, and by kneading and pressure outside for about one hour, we succeeded in almost emptying the tumor. A large bucketful of this peculiar substance was removed. It closely resembled calf's-feet jelly, and was of various colors. Some portions were pinkish, others orange, others lemon-yellow, while some small pieces resembled yellowish fat.

The walls of the abdomen having become relaxed, I was able to examine the pelvis with my finger, and found it occupied by a hard, nodulated mass. A large quantity of the ragged membranes was drawn through the opening, and incorporated with it was a small flat cyst, which contained a straw-colored fluid, and some of the peculiar jelly-like substance. A ligature was then thrown round the extruded membranes, close to the abdomen, and the whole cut off by the écraseur, without any loss of blood. A tent was placed in the wound, three interrupted sutures and adhesive strips were applied, and the patient was properly bandaged.

During the operation offensive gas escaped several times with the jelly-like substance, and the whole contents had a putrescent odor, which I was disposed to attribute to the admission of atmospheric air at the time of paracentesis.

The abdomen was greatly reduced in size. Some fullness still remained in the epigastrium and over the lower portion of the right side. The patient was left more comfortable than before the operation, and the pulse was fuller and less frequent.

The amount of gelatiniform matter removed weighed over twenty pounds, and the membrane one pound.

Next day the patient was quite comfortable, and made grateful acknowledgments for the relief afforded by the operation. The pulse was more voluminous, breathing good, skin soft, expression of countenance improved, and tongue less red and aphthous. The abdomen was resonant on percussion. There was no oozing from the wound.

October 7th.—Patient was still quite comfortable, and had enjoyed some sleep. The wound was examined; watery fluid and gas escaped from it on pressure; pulse losing force.

October 9th.—The patient died at ten o'clock A.M. An autopsy was made eighteen hours after by Dr. Drysdale in my presence. The wound had not united at any point. No adipose deposit existed in the walls of the abdomen, and emaciation was extreme. The peritoneum was diseased everywhere,—not only the parietal lining, but the visceral covering. Large patches of it, on the interior of the walls, varying from one-fourth to three-fourths of an inch thick, resembled spongio-piline, and consisted of innumerable small cells, containing the jelly-like material. The intestines were glued together by a uniform membrane covering them like a sheet, from whose surface was exuded this jelly-like substance. Yet, upon breaking through this coating, the convolutions of the intestines could be readily separated, and their peritoneal coat had a healthy appearance at the points of contact. Above the small intestines, in the epigastric region, was a large mass of jelly-like substance superimposed upon a dense body, which occupied the region of the stomach; but upon closer examination, the stomach and transverse colon were found crowded above this. On making a section of this dense body, the knife creaked in passing through it; it was composed of a honeycomb-like structure, filled with the same substance. Large vessels also pervaded it. As no trace of a normal omentum could be found, it was concluded, from the locality of this substance, that this was the omentum solidified and degenerated into colloid matter. The peritoneal coat of the liver also threw off this jelly-like material, and the organ was compressed into the hypochondrium. The fragments of membrane removed by the écraseur seemed to have originated from the vicinity of the left ovary. The right ovary also was composed of the same morbid tissue, and the whole pelvis was occupied by it. Indeed, it seemed to pervade the cavity of the abdomen and pelvis.

Although the disease, in its progress, involved the ovaries, the post-mortem appearances indicated that it originated in the omentum, and thence traveled to other parts.

In the above case my diagnosis was doubtful previously to the paracentesis. Tapping was resorted to for the purpose of affording relief, rather than to aid in the diagnosis. This operation, however, clearly decided its character. Had it been otherwise, and the fluid drawn been ovarian, an operation for the removal of the tumor would have been out of the question, in consequence of the pelvic complications.

Many of the characteristics of ovarian tumor were present: fixed points of resonance and dullness on percussion in every position of the body; elasticity and *fluctuation* in certain regions; hard deposits in others; and pelvic complications. Tapping in this case, as in many others, revealed the true character of the disease. It was not a soft fibroid tumor: because no fluid, *coagulable on exposure to air*, was removed. It was not ovarian of a benign character: because none of the various fluids belonging to that disease escaped. The substance extracted through the canula gave unmistakable evidence of *colloid disease*. I believe this peculiar jelly-like material is pathognomonic of this disease whenever it is present, as much so as the liquor sanguinis is of soft fibroid tumor, the spring-water-like fluid of cysts of the broad ligament, and the ovarian granular cell of ovarian dropsy.

d. CASE CXIX.—*Colloid tumor of the ovary, coexisting with ascites, which resembled an ovarian cyst; tapped twice; subsequent death; autopsy.* February 11th, 1859, I visited Pottsville to see Mrs. S., in consultation with Drs. Carpenter, senior and junior. They had sent for me to remove an ovarian tumor. The patient was forty-four years old, and had several children. The enlargement commenced in August, 1858. This was followed by almost constant menorrhagia, accompanied by clotted discharge. She had been tapped six weeks before I saw her, and a bucketful of semi-transparent, reddish fluid, coagulable by heat, was removed. After emptying the abdomen, a tumor was discovered in the left inguinal region, movable, and not hard. After the tapping, the menorrhagia ceased. The patient was decidedly cachectic, very feeble, and greatly emaciated.

At the time of my visit, the fluid had collected nearly to the same extent as before, although the tension of the abdomen was not so great. The abdominal veins were large and engorged. When the patient was on her back, and the abdomen was percussed, a resonant sound was returned in the umbilical and epigastric regions, and a dull sound elsewhere. When lying on the left side, the resonance was transferred to the right side, and there was dullness at the umbilicus. But when lying on the right side, the left still remained dull. The uterus was crowded toward the left side of the pelvis; its cervix and body were enlarged and indurated, and it was fixed firmly in position. The sound entered one and a half inches, at which point it was arrested by an unusually firm obstacle. The right side of the pelvis posteriorly was occupied by a firm, immovable mass.

My diagnosis was, that the fluid was not contained in an ovarian cyst, but in the peritoneal cavity; that a tumor, probably malignant, was the cause of the dropsy; and that the case was one unsuitable for an operation. To decide these points I proposed to tap her.

The trocar was entered through the linea alba several inches below the umbilicus. It passed through the wall of the abdomen with great ease, and a cider-colored fluid escaped slowly. Something seemed to be floating constantly against the mouth of the canula, obstructing the flow, and the escape of the fluid had to be aided by the introduction of the sound. A very large trocar was used, but it required a long time to draw off several pints. The abdomen was not nearly emptied, but it was sufficiently relaxed to admit of a more particular and satisfactory examination. The patient complained of considerable soreness from the manipulations.

I should here state that Dr. Carpenter had tapped her through the left linea semilunaris, and that the fluid had flowed away in a constant stream, without difficulty or delay, until the abdomen was entirely emptied.

The fluid was also coagulable by heat.

After tapping, another examination was made. An uneven tumor could easily be felt occupying the left inguinal region. It was slightly movable, not very firm, but had not the characteristic sensation which is communicated to the hand by an ovarian tumor. The condition of the organs in the pelvis was not altered; the uterus was not disturbed by moving the tumor. The percussion sound was resonant in every position of the body at all points uppermost, even over the *left side*, which had been dull before the tapping.

As my diagnosis was confirmed by the paracentesis, I declined any further surgical interference.

The patient survived about one month afterward. A post-mortem examination was made by Dr. Carpenter, who informed me that the intestines were glued together, and coated with a layer of plastic lymph; that the ovary was involved in the tumor; that the tumor consisted of innumerable small cells filled with a yellowish kind of jelly-like substance; and that he considered the disease *colloid cancer*.

This case is instructive from the fact that, at a certain period of its history, it resembled ovarian dropsy to such an extent that two most excellent physicians considered it a case of this kind. I have no doubt that, previously to the first tapping, when the distention was greatest, the percussion sound was dull over the whole abdomen and in all positions, because *the intestines were glued together, and coated with a layer of plastic lymph.* This of course fixed them closely to the base of the mesentery, and prevented their floating upon the surface of the fluid, as is usual in ordinary ascites. As a consequence, there could be no resonant percussion sound. In such cases the intestines must be submerged in a large accumulation of fluid in the cavity of the peritoneum, and the physical signs must correspond with those which exist in encysted dropsy. After drawing off the fluid, the detection of a tumor in the inguinal region would be calculated to corroborate the impression that the disease was ovarian. By watching the reaccumulation of fluid after the patient has been tapped, and making repeated examinations before the distention becomes great, or, examining the relaxing abdomen at the time of tapping, we are enabled to correct any errors arising from the binding down of the intestines.

e. CASE CXX.—*Malignant tumor of the ovary mistaken for pregnancy, and afterward for a removable ovarian tumor ; tapped ; death eleven days after ; autopsy.* November 25th, 1858, I visited Miss M. L., aged eighteen years. She first menstruated at the age of fourteen, and, with some trifling intermissions, she continued to be regular until the month of June, 1858, at which time the menses were suspended. Profuse clotted discharges were twice induced afterward by strong emmenagogues.

Simultaneously with the suspension of the menses she began to enlarge, and her physician pronounced her pregnant. She had a severe cough, which commenced in September and had resisted all treatment.

The abdomen having increased in size so rapidly, much beyond the ordinary progress of utero-gestation, the physician changed his opinion, and I was requested to visit her for the purpose of performing ovariotomy.

The abdomen was quite large, prominent, and round. It was hard in some places, semi-elastic in others, non-fluctuating, dull on percussion, and filled to the epigastrium. The hymen was not ruptured, but very yielding. The uterus was in place, small, and the cervix intact. It was also movable, independent of the tumor. She had emaciated, and become anæmic and cachectic.

The diagnosis was obscure. The patient was not pregnant. The tumor felt more like a softening fibroid than a multilocular ovarian tumor. Not meeting her physician at the time, I wrote to him as follows:

"The case of Miss L. presents some very bad features. I am strongly inclined to believe it to be malignant, and fear it will resist all treatment."

December 26th, 1858, I called to see the patient again. She still suffered from inveterate cough, was very weak and emaciated; pulse feeble and frequent; no menstruation; her abdomen had enlarged considerably, particularly in the right hypochondrium, at which point there was much soreness on pressure. The mass was resistant, but possessed an indistinct sense of fluctuation.

January 13th, 1859, the cough had nearly disappeared. The abdomen was larger. The patient was weaker, pulse more feeble and frequent, and respiration oppressed. With the hope of affording some relief, I punctured the tumor with the large trocar, and succeeded in getting about three pints of straw-colored fluid. It did not coagulate on exposure to air, but did by heat. Afterward the tumor was felt to be uneven.

The opening made by the trocar did not close, and the fluid continued to trickle away. The patient, becoming weaker from day to day, died January 24th, 1859.

An examination was made twenty-two hours after death by Dr. Drysdale. The abdominal enlargement was considerably less than at the time she was tapped. The emaciation was extreme, and there was no adipose deposit in the abdominal wall. The tumor was adherent to the parietes of the abdomen and to the omentum, which was much diseased. It filled up the whole cavity, and pushed up the viscera and diaphragm, so as to compress the lungs into the upper part of the thorax. It was nodulated, hard in some places, soft in others; was distinctly encephaloid in character; and consisted of the right ovary. The right broad ligament held it closely to the brim of the pelvis. The left Fallopian tube was adherent to it. A small cyst was developed in this tube midway between the ovary and its fimbriated extremity. The left ovary and uterus were of natural size and healthy, except that the tissue of the latter was slightly hardened. The omentum was much thickened and degenerated into encephaloid structure. The whole peritoneum was thickened and studded over with medullary deposits, some of which were as large as a bean. The lungs had the same deposits in them in large masses. This was particularly the case with the upper lobe of the right lung, which was carnified, and contained a large deposit apparently cancerous. The pancreas was indurated. The liver, spleen, and kidneys were healthy. The surface of the tumor, and of the intestines, had a dark-greenish and gangrenous aspect.

Dr. Drysdale made a microscopical examination of the tumor, and reported as follows: "Granular cells were present, together with epithelial cells containing large nuclei, and others with double nuclei."

f. CASE CXXI.—*Malignant tumor of the abdomen in a child, resembling ovarian tumor; tapped; death five days afterward; autopsy.* March 7th, 1860, I visited, in consultation with Dr. J. N. Walker, Miss A. M. A., aged twelve and a half years. She had never menstruated, nor were there any signs of puberty. She was small, quite childlike, had always been delicate, but had enjoyed better health during the winter of 1859–60 than before. She had a hereditary tendency to phthisis pulmonalis, and in the winter of 1858–59 had an attack of pneumonia.

It was noticed that her abdomen was enlarged on the 15th of February. Three days before, she had fallen against a board placed across a doorway as a guard for children, striking her abdomen, but she did not complain of being hurt. Soon after the enlargement of the abdomen was noticed, Dr. Walker was sent for. At that time it did not extend above the umbilicus. The stomach was irritable, pulse 120, the thirst great, and she had frequent calls to urinate.

When I saw her, the enlargement extended to the epigastrium. The abdomen was pretty uniform in shape, but varied in its resistance to pressure. Solid deposits could be detected in the right hypochondrium, and across the lower portion of the abdomen, while the whole left side was elastic. The percussion sound was dull everywhere. Fluctuation was distinct only over the left side. The uterus was raised out of the pelvis above the symphysis pubis, so that the os could scarcely be reached by the finger. The vagina was elongated and narrowed, and back of it the pelvis was occupied by an elastic tumor, which could be traced rising out of the pelvis into the cavity of the abdomen. The sound entered the uterus to the distance of three and a half inches, and its end could be felt about two inches below the umbilicus, and about one inch to the left of the linea alba. The finger, introduced into the rectum, encountered the same tumor pressing against the sacrum. This tumor was immovable.

Dr. Walker informed me that Professor H. L. Hodge had also examined the case, and pronounced it ovarian tumor.

My diagnosis was that the tumor was ovarian, although I would not express this opinion positively, as the tender age of the patient and the rapidity of development rather contradicted such an opinion. The case had every appearance of being malignant, and necessarily fatal, and hence an operation was unjustifiable.

March 15th I visited the patient again with Dr. Walker. The day before, at the recommendation of Professor Hodge, she was tapped by Dr. J. M. Corse through the linea alba, below the umbilicus, and about one quart of bloody water was drawn away. The emaciation had become extreme; the abdomen, notwithstanding the tapping, was much larger; the percussion sound was resonant all above the umbilicus, and in this region the distention was greatest. The breathing was labored, the pulse very feeble and frequent, and the patient evidently sinking.

Some of the fluid removed by the tapping was procured from Dr. Walker, and given to Dr. Drysdale for examination, who reported "a fluid of the consistence of thin mucilage, translucent, and of a light-red color. On standing, a bright-red deposit forms, leaving the supernatant fluid of a deep straw color.

"*Chemical examination.* — Neutral. Specific gravity 1018. Boiling produced a dense, yellow coagulum, leaving one-fifth of the bulk of the specimen fluid.

"*Microscopic examination.*—The granular cells, also some delicate nucleated epithelial cells and fat globules, were present, but the object in the greatest abundance was the blood corpuscle."

The patient rapidly sank, and died March 19th. A post-mortem examination was made by Drs. Corse and Walker, which was published in the "Transactions of the College of Physicians of Philadelphia," volume 3, page 337, New Series, and from which I copy:

"On post-mortem examination the next day a quantity of sanguineous fluid, like that obtained by the previous operation, was first evacuated; then a soft pultaceous mass occupied the opening in the abdomen; and transverse incisions, laying open the whole abdomen in four flaps, showed the entire space filled with a soft cancer matter, even up between the stomach and diaphragm. The whole uterus and ovaries were in one soft mass, a part only of which would hold together to be removed. The once tolerably hard tumor had, as is usual with these growths, become quite soft with its increase in size. The greater part of the fungous growth was scooped out with a saucer; and we could then see that the walls of the abdomen were the seats of attachment for this matter; numerous tumors of all sizes, from that of a small shot to an inch or more in diameter, were found to be appended to the omentum and to the intestines and mesentery.

"The whole substance removed was placed in a common bucket, and weighed eleven pounds and a half. The fluid which escaped when the abdomen was opened was supposed to be about two pounds, and the portion remaining in the abdomen about one pound, making in all *fourteen* pounds and a half."

The particular points of interest in the above case are,—the extreme youth of the patient, the rapid origin, progress, and termination of the disease, and the location of that disease in the organs of generation prior to the sexual development.

g. CASE CXXII.—*Malignant tumor of the ovary causing ascites; tapped twice; death in eleven days after the last tapping; autopsy.* The following letter, dated February 13th, 1866, I received from Dr. A. T., of Guilford, Connecticut:

"DEAR SIR,—Some three months since, my only surviving child, an unmarried daughter, twenty-four years of age, was suddenly taken sick, with distress after eating, tenderness of the abdominal parietes, especially in the region of the right ovary, and effusion of fluid in the peritoneal cavity. Dr. Bacon, of New Haven, has principally directed the treatment, but Dr. Hubbard, of Bridgeport, Dr. Pierson, of Orange, New Jersey, and Dr. Alonzo Clark, of New York, have visited her. She has followed a course of alteratives and diuretics with little or no benefit, and on the 30th of January Dr. Bacon and myself removed the fluid by paracentesis to the amount of some forty pounds. The fluid flowed with difficulty, although quite free from coagula; pressure had little effect upon the flow, and the cavity could not be entirely cleared, though she was much relieved. There is *something* in the region of the right ovary that is a morbid formation, and which I think is a source of the effusion, and which possibly is susceptible of being removed by operation.

"I wish you to come on to Guilford and see the patient, and, if possible, do something for her relief.

"I think you cannot examine the abdomen without a second removal of the fluid, which will become necessary in a week or ten days."

Just before receiving this letter I had made an appointment to perform ovariotomy in Putnam County, New York, on the 21st of February, and, as it was near Dr. T.'s residence, I invited him to meet me there. He did so, and, after fully discussing the case of his daughter, I expressed my fears that it was not a case for surgical relief. However, I agreed to visit her the ensuing week.

February 28th, 1866, I visited the patient, accompanied by Dr. Fetter, of New York, and Dr. Lusk, of Bridgeport. Previously to this attack of illness she had always enjoyed good health, and menstruation had been regular, but she had no recurrence of it during her sickness. The abdomen was larger than it had been before she was tapped. It was excessively distended and tight, the heart and lungs were crowded upward, the veins of the abdominal wall were enlarged and engorged, and the skin was shining in consequence of the extreme distention, and in some places abraded and leaking. The lower part of the abdomen was œdematous, the lower extremities were enormously swollen, the pudendum was tumefied, and the pelvis so occupied by effusion into the cellular tissue that nothing could be distinguished in it. Fluctuation was distinct, the fluid being in the peritoneal cavity. Pulse 125 to 130 to the minute, and feeble. Respiration was difficult. The sense of suffocation was so great that she had to be propped up in bed. The emaciation of the upper part of the body was extreme, and cachexia well marked.

I tapped her of several gallons of straw-colored fluid, deeply tinged with blood. The fluid at first was clear, then gradually became more and more tinged, and finally pure blood escaped. The clear fluid firmly coagulated by heat. After having been tapped, the wall of the abdomen remained thickened from œdema, but still a deeply-seated, immovable tumor could be detected, occupying a central position in the lower part of the abdomen. It was solid, not very dense in structure, and somewhat uneven on its surface.

On withdrawing the canula after the paracentesis, blood continued to flow freely, and could not be restrained by adhesive strips. Two suture pins, with twists of thread, were required to close the wound tightly before the bleeding could be stopped.

She was considerably exhausted by the tapping, and reacted slowly.

The diagnosis was malignant disease, which would terminate rapidly in death.

Dr. T. wrote to me on the 12th of March:

"Dear Sir,—My daughter's case terminated fatally yesterday, March 11th.

"She was not so much relieved by the tapping on the 28th as she was before. Four days afterward the pins ulcerated out, and no adhesion had taken place. I had to remove the fluid before I could make the wound unite; and I removed sixteen pounds, much of the same character as when you were here. Then I closed the wound (the same that you made) with several adhesive strips, and union took place. The abdomen began very soon to fill up, and before she died was nearly as full as when you came. Her appetite failed her four days before she died, and she sank rapidly.

"It seemed necessary to remove the fluid to prepare the body for burial, which I did to the amount of fourteen and a half pounds, and then I thought I might as well remove the tumor. It proved to be a soft tumor,—*medullary sarcoma*,—easily broken, brain-like, mottled, weighing four pounds, attached by a small pedicle to the left ovary. It might apparently have been easily removed, but an operation in such kinds of tumor does no good. I am satisfied that her disease was beyond the reach of either medical or surgical aid, at least until we know more than we do at present."

h. Case CXXIII.—*Malignant tumor of the abdomen, following a recovery from ovariotomy; exploratory operation; death twenty-eight hours after.* November 6th, 1867, I visited Miss A. S., of the city of New York, aged twenty-two years, in consultation with Dr. Fetter, for the purpose of performing ovariotomy. I removed a multilocular ovarian tumor weighing fifty pounds. It was extensively adherent, and consisted of the right ovary. The other ovary was healthy.

Menstruation commenced at the age of fourteen; it was always regular, profuse, and painful, until 1864, after which it did not return except when brought on by the influence of electricity. There was an entire suspension for twenty months before I saw her. The tumor began to make its appearance in the right side in 1864, about the same time that the menses became irregular.

This patient made a most excellent recovery, became fat and hearty, and menstruated regularly. July 22d, 1868, however, I was summoned to New York again by her physician, for the purpose of performing an operation for the removal of the other ovary. The abdomen was considerably enlarged, but a great deal of this enlargement depended upon the condition of the wall itself, which was œdematous. The skin had a purplish, congested appearance, and the capillary circulation was sluggish, so that upon pressing out the blood it would return slowly. In the cavity of the abdomen some masses could be felt resembling plastic deposits. There was also a general soreness of the abdomen, so that it would not tolerate pressure. The old cicatrix, extending from the umbilicus to the pubes, was hypertrophied, very firm, and prominent. The uterus was drawn up above the pubes; the os could scarcely be reached by the finger. She was much emaciated.

She attributes her present condition to the following circumstance: in June, while attending the theatre, she was dreadfully frightened by the explosion of a steam fire-engine. This was immediately followed by uterine hemorrhage, excessive pain, and abdominal inflammation and swelling. She, however, was better when I saw her, and appeared to be convalescing from an attack of acute inflammatory disease.

My diagnosis was that the case was not ovarian, and that the tumor consisted of inflammatory deposits.

September 23d, 1868, I saw Miss S. again with Dr. Fetter, and tapped her through the right side, removing fifteen pints of a syrup-like fluid, having a deep yellow color, and loaded with flakes of lymph, and a substance resembling fat. After the removal of this fluid a large tumor still remained, which I considered malignant in character. She was very weak, cachectic, and greatly emaciated. Although strongly urged by her physician and friends to operate upon her, I declined.

December 30th, 1868, I visited her again. She had increased very much in size, and the distention was extreme. The superficial veins were large and purple; the vulva, vagina, and lower extremities greatly swollen, and the uterus beyond reach. The patient, her friends, and physician insisted on an operation. But my opinion remained unchanged. I had decided that the disease was not ovarian, that the fluid was in the cavity of the peritoneum, the tumor malignant, and therefore an operation would be of no avail. At their urgent solicitation, however, I consented to make an incision about two inches long to the left of the cicatrix, so as to enter the abdominal cavity, and drew off several gallons of bloody fluid, filled with broken-down, soft, brain-like tissue. I then exposed the tumor to view. It was of a grayish color, covered with large purple veins, and adherent by very soft vascular tissue to the abdominal walls, and bled freely on handling. The enlarged fundus uteri was felt in front, with the tumor attached closely to its posterior wall. The finger could be pushed into the substance of the tumor as easily as into soft brain, which it closely resembled in structure. The medical gentlemen present were all satisfied that the diagnosis was correct, that the disease was medullary sarcoma, and that further proceedings should be abandoned. She died twenty-eight hours after. A post-mortem examination was not permitted.

i. Case CXXIV.—*A solid malignant tumor of the right ovary, accompanied by ascites; ovariotomy; death on the thirteenth day after the operation.* June 17th, 1871, Mrs. J. A. P., of Wilmington, Delaware, consulted me in reference to an abdominal tumor. She was thirty-two years old. Menstruation commenced at twelve years of age, continued regularly for three months, was then suspended for a long time, and, when it returned, it did so every three weeks until she was married. She was married in March, 1863, after which she became more regular. She had three children; the youngest was two years old. Lactation was free, and she did not menstruate while nursing. Latterly the menses had been scant, and continued for two weeks.

The patient first noticed the tumor on the 19th of April, 1871. Three weeks before I saw her, Dr. Wales, of Wilmington, Delaware, examined her. He diagnosticated ascites, coexisting with pregnancy. On the 15th of June she was tapped by Drs. Wales and Bush, removing eighteen pints of amber-colored fluid, containing, after standing, a whitish sediment. The fluid coagulated by heat.

Although tapped only two days before I saw her, she was as large as a woman at full period of utero-gestation. There was evidently an accumulation of fluid, to the amount of six or eight quarts, in the cavity of the peritoneum. The resonant sound existed over the highest point of the abdomen in all positions of the body. A tumor could readily be detected immersed within and surrounded by the fluid. It was very movable, slightly uneven, and felt like a compact multilocular tumor. The uterus was central, movable, and non-adherent to the tumor, as both could be rubbed on each other, and moved independently of one another. The pelvis was free from hard deposits, and did not indicate the presence of malignant trouble. The lower portion of the tumor could be felt in the superior strait of the pelvis, anterior to the fundus uteri, and communicated to the hand a sensation resembling that of a uterine cauliflower excrescence. The tumor was extensively movable, could be pushed high in the abdomen, and to the opposite side. An examination by the speculum revealed granular inflammation of the os uteri.

The patient considered herself pregnant, but I was satisfied that she was not.

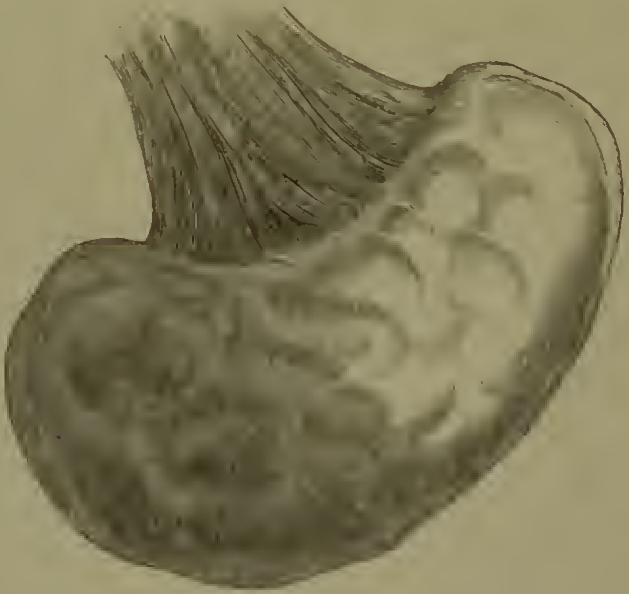
The diagnosis was, a compact multilocular tumor of the right ovary, with peritoneal effusion. The fluid may originate in the tumor itself, and exude through an opening in its envelope.

June 26th I removed the tumor. It was the right ovary, and resembled in shape a hypertrophied kidney, and its pedicle was connected with the tumor, so as to resemble the pelvis of the kidney. Fig. 25 represents the tumor.

The specimen was given to Dr. J. Ewing Mears for examination, who reported as follows: "In shape, the tumor resembles, in a very marked manner, an enlarged kidney.

One extremity is much larger than the other. The weight of the tumor is three pounds, less one ounce. Its long diameter measures twelve inches; its transverse diameter is six inches; the length of the greater curvature is twenty inches; that of the lesser curvature is six inches. The large extremity and the greater portion of the greater curvature are stained and mottled; the remaining portion is of a dull white color. On pressure it feels dense, hard, and nodulated, the nodules varying in size. In some places, especially toward the large extremity and along the upper border, it is softer, and cavities can be detected; the surface is nodulated, the masses projecting above the surface.

Fig. 25.



"A section was made along the greater curvature, and the following conditions observed: that portion about the small extremity was extremely dense and resistant. Toward the large extremity it was softer, and the knife passed with less resistance. At this point the tissue was stained and soft to the depth of about one inch. Below this the substance was uniformly dense and firm. The color was grayish-white. A quantity of juice exuded on making the section. The appearance of the divided tissue was markedly *fibrous.*

About the middle of the greater curvature a cyst, the size of an English walnut, was found. Just at the lower border of the stained portion, in the substance of the tumor, another cyst was found, larger than the one just mentioned. It contained a thin, sanguinolent fluid. At various points along the upper border, embracing the large extremity, a number of small cysts were found.

"Sections were taken from the white and stained portions, and submitted to microscopic examination. That from the white, dense portion showed a fibrous stroma, in which were imbedded numerous variously-shaped cells, with oil globules and granular matter. The fibrous stroma consisted of fibres presenting many different arrangements,—some lying parallel and close, others crossing at various angles, and others again forming alveoli. The cells varied in shape, being round, oblong, and oval, and contained many nuclei.

"The section from the stained portion presented a fibrous texture less dense, and there was exhibited a great tendency to the alveolar arrangement of the fibres. The fluid from this portion contained many blood corpuscles,—the cells did not differ from those found in the white, dense portion.

"The tumor appears to me to be a specimen of scirrhus, or, according to Rokitansky, fibro-carcinoma of the ovary. It is the rarest form of cancer which attacks the ovaries. It is of slow growth, and is frequently associated with scirrhus in other parts of the body. Frequently it exists for a long time without producing any visible cachexia."

CHAPTER XX.

RECTOCELE AND CYSTOCELE.

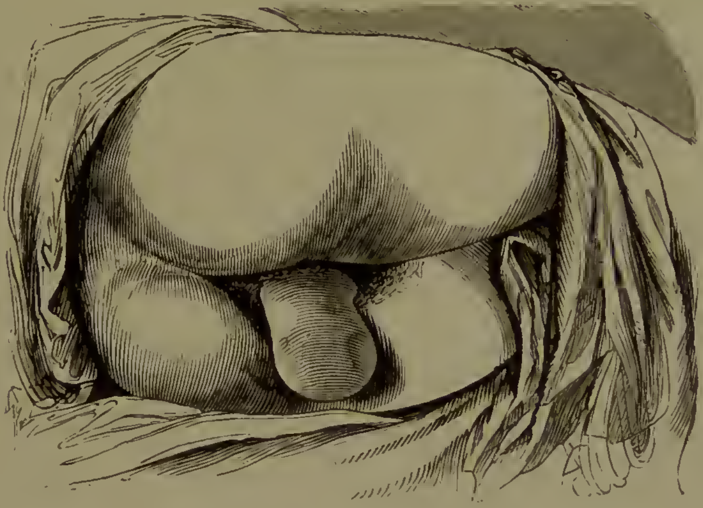
THE walls of the recto-vaginal cul-de-sac may be pushed downward either by bowel or an ovarian tumor, so as to force the posterior wall of the vagina through the os pudendi, and cause all to hang down between the thighs like the uterus in a state of procidentia. In either case, the protruding tumor will be more or less tense when the patient is in an upright position, and more relaxed when in a recumbent posture. In the case of an ovarian cyst, the tumor will be dull on percussion, and more or less translucent by transmitted light; while in hernia the percussion sound will be resonant, and the tumor perfectly opaque. Should, however, a multilocular ovarian tumor, composed of very small cysts, occupy the cul-de-sac, transmitted light would not aid the diagnosis, and the only distinguishing sign would be the dull percussion sound. Usually, too, abdominal enlargement is associated with an ovarian protrusion; while in intestinal displacement, the abdomen is flat. Ascitic fluid, also, may collect in the recto-vaginal cul-de-sac. In such a case, the fluid would float the intestines out of the pouch, and the tumor assume most of the characteristics of a unilocular ovarian cyst occupying this space, viz., dull percussion sound, translucency, and abdominal enlargement. Here the percussion sounds over the abdomen could only clear up the difficulty.

I do not remember to have met with an instance in which the intestine or an ovarian tumor caused protrusion of the anterior wall of the vagina, but a hernia of the bladder is by no means a rare occurrence. The catheter will at once detect it. The uterus, in both cases, may remain in the pelvic cavity.

a. Case CXXV.—*Rectocele caused by a multilocular ovarian tumor; diagnosis confirmed by ovariotomy.* November 25th, 1863, Mrs. H. I. consulted me. She was twenty-nine years old; menstruated at the age of thirteen; was married before she attained her seventeenth year; and had two children, the youngest ten years old. After the last childbirth her abdomen remained larger than natural, and nine months afterward she swelled rapidly. She was tapped seven times, seven gallons of fluid being removed at each tapping.

The abdomen was very large, and quite uniform in shape. One large cyst occupied the left side, another the right side, and a large multilocular mass the centre. Besides, there was a large protrusion from the vagina, back of the retained uterus, the size of a child's head. This was dull on percussion, translucent, soft, fluctuating, and entirely reducible by pressure while the patient was in a recumbent position. (See Figure 26.)

Fig. 26.



Diagnosis.—Rectocele caused by the presence of an ovarian cyst, which was confirmed by ovariotomy.

b. Case CXXVI.—*Rectocele caused by an ovarian cyst; diagnosis confirmed by ovariotomy.* April 2d, 1868, I examined Mrs. T., of Williamsport, Pennsylvania. She was about thirty-eight years of age; had several children, the youngest three years old. Menstruation was regular and rather profuse. After the last parturition, she noticed that the abdomen did not return to its usual size. About one year before I saw her the abdomen began to enlarge, and at the time of my examination it was greatly distended. Before the swelling commenced, there occurred a prolapsus of the posterior wall of the vagina, which protruded as large as a goose-egg, and gave her much annoyance. This was supposed to be a recto-vaginal hernia. Examined in an upright position it became tense, but in a recumbent position it was flaccid, and under pressure it receded. The percussion sound was dull, and when a strong light fell on it, it was rendered translucent.

Diagnosis.—Rectocele caused by an ovarian cyst, which was afterward confirmed by tapping and ovariotomy.

c. CASE CXXVII.—*Cystocele mistaken for a cystic tumor, interfering with delivery, and excised during parturition.* Some years ago I was requested to visit a woman, who had been confined several months before, and ever after had been troubled with a constant discharge of urine. My brother saw the case with me. There was no bladder,—nothing but a small patch of vesical mucous tissue could be seen. There was a short urethra, through which the catheter was passed into the vagina, and this patch of mucous membrane formed the anterior wall of the vagina.

The patient informed us that while pregnant there was a protrusion from the vulva, which varied in size. During parturition, which was severe and protracted, this tumor became large and hard, and seemed to obstruct the passage of the child. She said that the physician, believing it to be a tumor, cut it away, after which the child was born.

The condition of the patient seemed to verify the statement.

CHAPTER XXI.

HYPERTROPHY OF THE ABDOMINAL WALLS.

THE most common cause of enlargement of the abdominal walls in women is an adipose deposit in the subcutaneous tissue. When occurring in the married, during menstrual life, it often leads to the suspicion of pregnancy as well as of tumor; and when it supervenes in the unmarried, or after the climacteric period, the apprehension of abdominal tumor sometimes becomes very great. Not only the patient herself, but her friends and medical attendant not unfrequently are deceived as to its real character. As a general rule, however, there is one feature in these cases which uniformly exists to distinguish such hypertrophy from ovarian enlargement: *in the latter, the increase is usually confined to the abdomen; in the former, it is universal.* Associated with an ovarian tumor there may also be, as in the excessively fat patient, greatly enlarged lower extremities; but this condition usually arises from obstructed circulation, and is characterized by œdema, which will pit on pressure, whereas the merely fat limb is elastic and will not pit. Or, there may be an accidental phlebitis in the vessels of the lower extremities, or phlegmasia dolens, accompanying an ovarian tumor, producing enlargement of the lower extremities, which cannot be distinguished from the adipose limb by this quality of *pitting* on pressure. The milk-leg, however, can never be mistaken for fat, as it is non-elastic and sensitive to pressure, and usually incapable of free motion. Besides, in ovarian tumor the upper extremities and other parts of the body are usually emaciated, while in the fatty abdomen other portions of the body correspond with the lower limbs.

When a corpulent person is placed in a recumbent position on the back, and the abdomen palpated and percussed, an inexperienced observer may readily be misled. The peculiar elasticity of adipose tissue, particularly in large accumulations in the abdominal region, somewhat resembles that associated with an ovarian tumor. Palpation may confound one with the other, and percussion causes a vibration or tremulousness that has been mistaken for fluctuation. Such a combination, therefore, of enlargement, elasticity, and apparent fluctuation, as exists in a fatty abdomen, embraces three characteristics of an ovarian tumor. The sounds returned on percussion are also so masked by the superincumbent layer of fat that they may lead the unpracticed ear into error, for they are seldom resonant; being semi-resonant, or almost dull, they may be mistaken for the dull sounds noticed in ovarian cysts. By making strong and deep pressure, however, with one finger, and using pretty forcible percussion, the resonant sound may be more plainly evolved; or by turning the patient upon the sides, and percussing the lumbar and inguinal regions in that position, where also the adipose tissue is less developed, more satisfactory results may be obtained.

Should there be any doubt thus far as to the character of the case, it may probably be cleared up by the following procedure: *grasp the walls of the abdomen with the hands. If they be hypertrophied by fat, the hands will be filled with large rolls of tissue, which can be lifted off from the muscular parietes and moved to and fro over their surface*, while at the same time an estimate may be made of the amount of enlargement beneath the adipose wall, and *within* the cavity. In ovarian tumor, as a general rule, the integument is comparatively thin, and the same manipulation will prove that the tumor is not outside of the muscular wall, but within the abdominal cavity. Still, an exceptional case may sometimes occur where an ovarian tumor may be found within the cavity of an abdomen having fatty walls. In this case an examination of the patient, when placed on her side, in the lumbar and inguinal regions, with particular attention to the sounds elicited by percussion, will enable the surgeon to arrive at a correct diagnosis. According to my experience, however, an ovarian tumor is rarely so associated, except in the early period of its history, or while of diminutive size. But the same remark will not apply to uterine fibroids, which are not unfrequently found in fat women. In the latter case, an examination per vaginam, and with the uterine sound, will generally lead to their detection. In uncomplicated fatty enlargement alone, the *toucher* is also a valuable aid in diagnosis, as the relations of the uterus to the pelvis or to surrounding parts are in no wise affected by it.

The following cases will illustrate these points:

a. CASE CXXVIII.—*Adipose hypertrophy of the abdominal wall mistaken for an ovarian tumor.* February 19th, 1863, I was requested by Dr. R., of Ohio, to see his wife, whom he believed to be suffering from an ovarian tumor, and whom he had brought to this city for the purpose of consulting me. At the suggestion of Dr. W., then of Philadelphia, a surgeon in the army, he had been treating her for some time with iodine, but without any advantageous results.

She was a ruddy, hale, hearty-looking woman, the very picture of health, very fat, and about thirty years old. She had three children,—the last one being born a short time before in a Southern prison. She was confined the same night on which she was taken prisoner, and the child was dead-born. She recovered well, but afterward complained of pain in the left ovarian region. She had been growing rapidly larger, but the increase was general, not confined to the region of the abdomen.

Struck by her perfectly healthful appearance, I inferred that there must be some mistake about her condition.

I, however, examined her carefully in company with her husband. She was placed first in a recumbent position on her back with the abdomen exposed. Percussion returned a feebly resonant, almost dull sound over the whole anterior surface of the abdomen. There was a considerable prominence, but it was loose, flabby, and had a dough-like elasticity. No nodules, ridges, or inequalities of surface, or of texture, could be detected. There were no signs of fluctuation: only a peculiar kind of vibration or tremulousness was present on percussing the abdomen. Upon grasping the cutaneous layer with the hands, large rolls of fat could be lifted away from the muscular walls, beneath which the abdomen was estimated to be of no unusual size. On changing her position to either side, so as to allow the most fatty portion of the abdominal wall to gravitate from the lumbar and inguinal regions, and then making deep pressure with the outstretched finger over these regions, and percussing on it, a distinctly resonant sound was evolved from both sides. No tumor could be felt in these positions by the most careful examination.

The uterus was found in a proper position, of the natural size, and quite movable. The sound entered the normal distance. The pelvis was free. The os tincæ having a velvety feel, a speculum examination was made: it revealed a condition of granular inflammation, which accounted for the ovarian pain.

The diagnosis was positive against the existence of ovarian or other form of tumor, to the great delight of both the doctor and his wife.

At the meeting of the American Medical Association held in May, 1872, I met Dr. R., who informed me that about two years after his visit to Philadelphia in 1863, his wife died rather suddenly. An autopsy was made. Death was caused by an abscess of the liver, and both ovaries were found to be normal.

b. Case CXXIX.—*Adipose hypertrophy of the abdominal wall mistaken for an ovarian tumor; all arrangements made for ovariotomy.* October 25th, 1865, I visited the "Home of the Aged and Infirm," New York, by invitation of the managers of that institution, for the purpose of removing an ovarian tumor from one of the inmates. A physician of considerable experience in abdominal tumors had examined the patient, had decided upon its character, had corresponded with me in reference to the operation, had invited several physicians to be present, and had completed all the preliminary preparations for the operation.

The patient was Miss A. C., aged fifty-two years, and blind from birth. She had always enjoyed good health, and had menstruated regularly until one year before, when she had an attack of flooding, at which time the menses ceased altogether.

I found the patient to be a large and very fat woman, with a great quantity of fatty deposit in the subcutaneous tissue of the abdominal wall. All the signs characterizing the preceding case were well marked in this, and not the least evidence of an abdominal tumor could be detected. The prominence of the abdomen, with the masked sounds on percussion, had, no doubt, deceived her intelligent physician. An examination per vaginam discovered an enlarged uterus, the sound entering nearly four inches. This was the only morbid condition that could be discovered.

The attending physician and those assembled to assist in the operation were all disappointed and surprised at the announcement of my diagnosis: that there was no ovarian tumor, and nothing but an adipose hypertrophy of the abdominal wall.

c. CASE CXXX.—*Adipose hypertrophy of the abdominal wall mistaken for an ovarian tumor; a day fixed for an operation.* May 3d, 1871, while at San Francisco, California, in attendance upon the meeting of the American Medical Association, I visited the California State Woman's Hospital, by special invitation of the surgeon in charge, to examine a case of ovarian tumor, the removal of which had been fixed for Monday following, May 8th. Dr. John Morris, of Baltimore, accompanied me. On arriving at the hospital, however, in consequence of a misunderstanding as to the time of the appointment, the attending surgeon was not present. We passed through the wards, guided by the nurse, who pointed out to us a very corpulent woman as the patient to be operated on for the removal of an ovarian tumor. The whole appearance and physiognomy of the patient were so expressive of the most perfect health, that I immediately turned to Dr. Morris and remarked that the patient could not be the subject of an ovarian tumor, or of any very serious trouble. No examination was made on that day.

Next day I visited the hospital with the surgeon in charge, who, in giving me a history of the case, stated that Dr. Storer, of Boston, then in San Francisco, had examined the patient, and had agreed with him that it was a case of tumor, and that they had fixed on the succeeding Monday for ovariotomy.

The patient, as before stated, was a very large, corpulent woman, with a fatty, protuberant abdomen, about forty years old, and had grown rapidly fat. On examination, the uterus was found to be normal. The pelvis was free. The functions of life were perfect. All the signs peculiar to an abdomen loaded with fat, and heretofore described, were well marked. I was perfectly satisfied that there was no tumor. There may have been a fatty omentum, but there was certainly no tumor.

In consequence of this diagnosis, the operation was not performed.

It is unnecessary to continue these illustrations, as the symptoms are pretty uniform in all cases of fatty enlargement. The cases resembling tumor and pregnancy are by no means unfrequent. As a general rule, those cases that mislead the surgeon are associated with some form of uterine trouble, which, usually producing more or less distress and inconvenience, causes both patient and physician to attribute their occurrence to the existence of a tumor, as evidenced by the increase in size.

There is, however, another condition of the abdominal wall, accompanied sometimes by enormous hypertrophy, calculated to lead to error of diagnosis, but which is exceedingly rare. I will record two instances, one of which is most extraordinary:

d. Case CXXXI.—*Hypertrophy of the muscular wall of the left side of the abdomen, resembling a tumor.* June 25th, 1869, I examined Mrs. C. H. L. at the office of Dr. John Morris, Baltimore, Maryland. She was forty years old, and had six children, the youngest two years old. Menstruation commenced at the age of fifteen, and was always regular. She was married at twenty-seven years of age.

She was a large though not a fat woman, with a very protuberant and pendulous abdomen, but otherwise uniform in shape. When in a recumbent position, the percussion sound was dull over the whole left side, whether she was on her back or sides, and resonant elsewhere. Very little adipose tissue could be discovered beneath the skin, as the latter was quite thin and could be readily gathered up from the subcutaneous tissue. The arms and legs were not unusually large, and by no means corresponded with the size of the abdomen. When the walls on the right side of the abdomen were deeply grasped by the hands, the muscular parietes could be seized and lifted up, and seemed comparatively thin; while those on the left side could not be grasped, the parts beneath the skin being very thick, unyielding, and somewhat painful. Though both sides were so different to the touch, to the eye they were alike. Nothing abnormal could be detected within the cavity of the abdomen, and the hypertrophy appeared to be confined to the parietes of the abdomen on the left side, beneath the skin. The uterus was small, and healthy. The pelvis was free.

Diagnosis.—Hypertrophy of the muscular wall of the left side of the abdomen.

This patient became pregnant afterward, and miscarried with a dead child.

e. CASE CXXXII.—*Elephantiasis of the abdominal wall, producing enormous enlargement of the abdomen, mistaken for an ovarian tumor.* August 12th, 1868, I visited Mrs. J. L., of Mount Eagle, Centre County, Pennsylvania, in consultation with Dr. E. Parry, of Lock Haven, and T. Rothrock, of Howard, of the same county. The case had excited intense interest, and several physicians had seen the patient. All pronounced it a case of abdominal tumor, and some of them an ovarian tumor. Some recommended ovariotomy, and seemed willing to attempt it, while others thought the removal of the tumor was impracticable.

The patient was sixty years old, the mother of twelve children, the youngest one grown up. She was a woman of small stature, and at the time of marriage weighed only one hundred and eleven pounds. Up to the time I saw her she had always enjoyed excellent health, notwithstanding her great size.

When about fifty years of age, she began to increase in size, and ever after continued to grow larger. For some time before I saw her she thought that she was losing flesh in the upper portion of the body, while the abdomen continued to enlarge. I found her sitting up on a chair, with her immense abdomen projected far in front of her and supported on another chair, so that the seat of the chair was wholly occupied. She was perfectly happy and cheerful, free from pain, and had the physiognomy of good health. The face, hands, and feet were of ordinary size, but elsewhere she was enormous. The shoulders, arms, hips, thighs, and legs were greatly enlarged by what I considered adipose deposit, but the tissue was very flabby and soft; while the abdomen itself seemed to get its enormous size from hypertrophy of the dermoid tissue, apart from any adipose deposit. On attempting to grasp the abdominal wall, it was found to be impossible, in consequence of its inelasticity. The cutis vera itself seemed to be thickened, varying from four to eight and ten inches. To its entire depth it was hard, rigid, and inelastic; and it was so hypertrophied that the hair follicles were scattered over the surface, with intervals of from one-half to one inch between them, and the follicles themselves were large enough to be seen across the room. There was no œdema anywhere to account for the size, and the abdomen was firm and resisting, and of great weight. The umbilicus was retracted, and of such a depth that the index-finger could be passed in its whole length, as into the finger of a glove.

When in bed, she could only lie upon the sides, in consequence of the great size and weight of the abdomen. She reqnired to be turned from side to side several times during the night, and, as she could not accomplish this herself, her husband, who occupied another bed in the same room, would aid her by seizing the huge mass and hoisting it over her to the other side of the bed.

I examined her per vaginam while she lay in bed. The uterus was small, movable, and in proper position; the vagina natural.

Digestion, defecation, urination, and all the vital functions were regular.

The following measurements were taken: round the waist, forty-five inches; round the abdomen, ninety-two inches; from one superior spinous process of the ilium to the other, across the abdomen, sixty-four inches; from sternum to umbilicus, twenty-two inches; from umbilicus to pubes, forty-three inches; round the thigh, thirty-six inches; round the calf of the leg, twenty-three inches; round the arm, fifteen inches. Weight, four hundred and fifty-five pounds. It may be stated, as a mere matter of curiosity, that her husband weighed two hundred and eighty-one pounds!

Diagnosis.—Elephantiasis of the abdominal wall.

The following particulars were communicated to me afterward by Dr. Parry: "October 24th, 1868, she had an attack of hemiplegia, with loss of sensation on the right side; her sight and hearing returned fully in about two weeks, and her speech partially. She improved so much by the 7th of January, 1869, as to be able to sit up. October 4th, 1869, she had an attack of apoplexy, and died next day. No post-mortem examination was allowed.

Fig. 27.

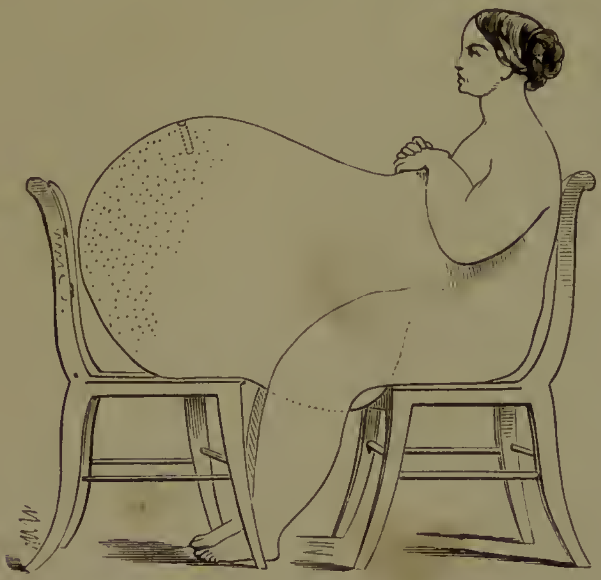


Figure 27 will afford a good idea of this remarkable case.

CHAPTER XXII.

ADHESIONS.

As the questions of General and Differential Diagnosis have been so extensively considered in reference to the operation of ovariotomy, it will be proper, before concluding our subject, to point out the indications of adhesions, and their bearing upon the propriety of an operation. Upon this question, however, I think the large mass of the profession is at fault, in magnifying the importance of adhesions and in dreading to encounter them. Parietal adhesions certainly involve no vital organs, and in the large majority of cases may be separated with perfect impunity. The tender, delicate, and susceptible peritoneum no longer exists as such; its character has been altered. Physiologically it is not peritoneum, and its pathological change renders it less liable to take on traumatic inflammation than the unaltered healthy membrane. Parietal adhesions complicate an operation, but, in general, do not unfavorably affect its results. This observation, however, will not apply to all cases. Vascular parietal adhesions when separated may cause hemorrhage, which is usually under our control, and subsequent septicæmia,—a rather rare occurrence. Even omental adhesions, which are quite as common as parietal, are not so serious as is generally supposed, and, when properly managed, do not greatly affect the results of an operation. Operators of large experience, I think, will agree in these views, and the objections will be found to originate with those who have little or no experience in ovariotomy. There are other forms of adhesions, however, which are very grave, but fortunately more rare. I allude to visceral adhesions. These, while they augment the dangers of an operation, do not always forbid its completion. Ovariotomy has been successful in cases complicated with the most extensive visceral adhesions, such as those between the tumor and the intestines, the bladder, the uterus, the liver, etc. Indeed, it is surprising to see how rapidly a patient will sometimes recover after a most desperate operation, involving, to a great extent, the most vital abdominal organs. And, on the other hand, it is equally surprising to find a fatal termination sometimes following the removal of a simple non-adherent cyst, which would seem to offer the best prospects of success.

In the consideration of this subject it will be well to make the following division:

A. Ovarian tumors without adhesions.
B. Ovarian tumors with parietal adhesions.
C. Ovarian tumors with omental adhesions.
D. Ovarian tumors with visceral adhesions.

Is it possible to diagnosticate the existence of these several conditions? And, if it is possible, will it be proper and advantageous, in considering the propriety of ovariotomy, to regard these several forms of adhesions as barriers to an operation, in view of our past experience in the results of such operations? These questions will now be considered.

A. **Non-adherent ovarian tumor.**—In deciding the question of adhesions, both the history of the case and the physical examination of the patient are important. If the tumor has originated without pain, and, throughout its whole development to the present time, has been unaccompanied by suffering; if, when small, or reduced in size by tapping, it could be pushed about, or it rolled from side to side on changing the position of the body; if, when it completely fills the abdomen, it can be, even slightly, shifted in position without carrying the walls of the abdomen with it, or if the walls can be lifted from and moved over the tumor; if deep inspirations are accompanied by downward motions of the tumor; if, upon attempting to rise from the supine to the erect position, without the aid of the arms, an oval projection is formed in the umbilical region; and if, on palpation and pressure, the abdomen is free from pain: the inferences would be strongly in favor of a tumor non-adherent,—at least to the walls of the abdomen.

If, in addition, the functions of life are properly performed,—the appetite and digestion are good; the tongue is natural; skin is soft; breathing is unimpeded; pulse is regular and not too frequent; the renal, intestinal, and uterine functions are normal; and there is no constitutional disturbance or general dyscrasia: we may also infer that the tumor is free from omental and visceral adhesions.

Finally, if, upon a vaginal, vesical, and rectal examination, we find that the pelvis is entirely free from an unyielding tumor; that the pelvic organs are all *in situ;* that the uterus is healthy and easily movable, and that it and the tumor can be moved about without the one affecting the other: we may conclude that there are no pelvic adhesions or complications.

Ovariotomy, in such a case, offers the very best results, and better, in my opinion, than any other established capital operation in surgery.

Case CXXXIII.—*A non-adherent ovarian cyst; operation; recovery.* May 18th, 1870, Mrs. M. consulted me at my office in reference to an abdominal enlargement. She was forty years old; first menstruated at the age of fifteen years, and had always been regular. She married at the age of twenty; had two children, the youngest being sixteen years of age, and two miscarriages when two months advanced in pregnancy, the last about four years before I saw her.

The enlargement of the abdomen commenced in the spring of 1868. She never had pain, and had no functional derangement. Her general health was good. Her attention was first drawn to her condition in consequence of her clothes becoming tighter at the waist. The increase in size was gradual.

She was as large as a woman at the full period of pregnancy. The shape of the abdomen was uniform; fluctuation was distinct; the pelvis was free; uterus was *in situ*, and the sound entered two and a half inches. Indeed, all the above indications of a non-adherent tumor existed. There was resonance in the left hypochondriac and lumbar regions.

Diagnosis.—Unilocular ovarian tumor of the right ovary, free from adhesions.

May 26th, 1870, ovariotomy was performed; an incision of two and a half inches was made, and eighteen pints of fluid removed, the emptied non-adherent cyst was readily withdrawn, the operation was completed, the wound was dressed, and the patient was placed in bed, in less than fifteen minutes. The operation was followed by a rapid and uninterrupted recovery.

B. **Ovarian tumor with parietal adhesions.**—The early history of an adherent tumor may correspond with that of one non-adherent; but if we are told that in the course of its development the patient had been seized with abdominal pain, accompanied by fever and other derangements of the system, local or general peritonitis may be apprehended, and adhesions may have occurred as the result of the inflammation. If the tumor, when small, is not capable of being displaced from its bed by ordinary pressure, or by changing the position of the body; or, when large, it is impossible to move it to the smallest extent without pulling the walls of the abdomen with it; if the abdominal walls cannot be lifted from the tumor, or moved over it; if deep inspirations do not alter the relative position of the tumor and the abdominal parietes; or if the contraction of the recti muscles fails in producing the oval projection in the umbilical region; and if the abdomen is sore to pressure, or with motion: it is right to infer the presence of adhesions. In manipulating the abdomen, a sensation of crepitus, resembling the crackling of leather, may occasionally be noticed, which is described as a sure indication of adhesions, but which is by no means reliable, as in some cases it exists in a most marked degree in non-adherent tumor. The same may be said of bruit de frottement when it is detected by auscultation. Still, they may be taken as signs of adhesions, the result of recent inflammation. These peculiar sensations and sounds, in the exceptional cases just referred to, may depend upon some condition within the tumor itself, when adhesions are not associated with them.

Even in the absence of pre-existing symptoms of inflammation, the presence of adhesions may be inferred in cases of enormous growths. Extreme distention alone, causing uninterrupted and great pressure between the surfaces, impairing the tone and action of the abdominal muscles, and thereby destroying attrition and motion between those surfaces, will bring them in such close contact that strong adhesions may occur from the pressure, independent of inflammatory causes. The same effects may result from a course of tight bandaging, even where the tumor is not of extraordinary size, pressure of a bandage having the same effect as the pressure of the tumor. In illustration of the effects of pressure I will cite the following case:

CASE CXXXIV.—*An ovarian tumor, with strong parietal adhesions arising from the effects of tight bandaging; ovariotomy; recovery.* October 12th, 1866, I examined Miss M. T., of the city of New York. She was twenty-three years of age; first menstruated at the age of sixteen, and has always been regular, at intervals of three weeks. She was in the habit of wearing very tight bandages, in order to arrest the progress of the abdominal enlargement. The bandage was worn as tightly as it could be drawn, and yet she had become so habituated to it that it was worn with comfort.

She was much larger than a woman at the full period of pregnancy; measuring round the waist twenty-nine inches, round the umbilicus forty-one inches, from sternum to umbilicus eleven inches, from sternum to pubes twenty-three inches, and between the two superior spinous processes of the ilia twenty-six inches. All the signs of a unilocular ovarian cyst were present, with some hard deposits in its walls. Fluctuation was distinct. The uterus was small and movable, and the sound entered only half an inch. There had been no evidences of inflammatory action, but signs of parietal adhesions existed, which were diagnosticated as the result of the tight bandaging.

October 31st, 1866, I operated on Miss T., assisted by Drs. Peaslee, Janvierre, Brown, Field, Peters, of New York City, Clarke, of Brooklyn, and Cutter, of Newark. It required an incision about six inches in length. The abdominal wall and cyst wall were both thin, and so intimately united by adhesions as to obscure the usual line of demarkation between them. The incision, consequently, instead of being carried through the abdominal parietes only, divided those of the cyst, and gave exit to a dense, chocolate-colored fluid. In attempting to separate the cyst from the wall of the abdomen, it was almost impossible to distinguish one from the other at the line of incision, as they were so intimately united. I persevered, however, until I separated the layers, and finally succeeded in stripping the cyst wall from the whole inner surface of the abdomen, to which it was attached by the strongest adhesions. Other attachments existed. The patient recovered.

In the consideration of adhesions, the character of the tumor itself should be taken into account. A malignant growth is very apt to attach itself to everything with which it comes in contact. A simple ovarian cyst, as a general rule, is not so likely to form adhesions as a compound cyst, as the latter usually is more largely and unequally developed, and the dangers of inflammation are multiplied. In multilocular tumors, when the symmetry of the abdomen is maintained, there is less probability of adhesions than in those cases accompanied by great inequality of surface and contour.

Tapping furnishes considerable aid in determining the existence or non-existence of parietal adhesions. A non-adherent unilocular cyst, on being emptied, will collapse; its walls will fall together and recede from parts previously occupied. Parts that were dull on percussion now become resonant, and the dullness is confined to the lower portion of the abdomen. On deeply grasping the central portion of the abdomen, the cyst wall may be taken up between the thumb and fingers, and may be felt slipping away from the grasp as it recedes. If the cyst wall be very thin, however, the grasp will not so readily detect it, and the abdominal wall will sink in more, after tapping. As the cyst again refills, its boundaries will be more clearly marked, and confined to the lower portion of the abdomen; and as the fluid accumulates, the resonance around its periphery will be uniform, being most deficient on the side from which the tumor originates. The tumor, as it again develops, will be capable of being moved to a greater or less extent as it enlarges. These conditions will exist until it again assumes its former size.

An adherent unilocular cyst will not recede from the abdominal wall after being tapped. The dullness on percussion will be more extended, and the peripheral resonance masked or less decided. The slipping of the cyst from the grasp will not be so evident. The refilling of the cyst will be more diffused, and the increasing tumor less movable, and not so well marked in its contour until a later period. The abdominal wall immediately after tapping has usually a more doughy or œdematous appearance and feeling, and does not sink to the same extent in its upper portion.

In considering the propriety of ovariotomy, too much weight has been given to the presence of parietal adhesions. Many operations, I fear, have been abandoned in their incipient stage, in consequence of the existence of adhesions, when they might have been safely completed. Although complicating an operation, they offer no positive objections to it, and do not greatly diminish the favorable results. Hemorrhage from the walls of the abdomen is usually under control; septicæmia arising from torn, dead tissue is a remote circumstance; and inflammation, as a consequence of such adhesions, is very rare. The peritoneum, as has been stated, has already undergone inflammatory action. Its physiological condition has entirely changed. It no longer is the tender, sensitive membrane capable of being readily inflamed. It in reality is not a normal serous membrane, but an altered structure, not very liable to inflammatory action. Hence, when parietal adhesions exist, peritonitis need not be regarded as a serious objection in considering the propriety of an operation.

C. **Ovarian tumor with omental adhesions.**—The omentum is very frequently adherent to an ovarian tumor, and particularly to the multilocular form. It may be attached by a single fasciculus to any part of the tumor, generally to its superior, lateral, or anterior face, and may stretch, cord-like, over the whole front of the tumor and be inserted into the pelvic portion of it. Or, it may be spread over the whole anterior superior portion of the mass like a fan, and be attached to every part over which it is expanded. I know of no means by which such adhesions may be positively diagnosticated. I am disposed, however, to look for them in all cases of large tumors, accompanied by resonance on percussion over the upper border of the abdomen, and particularly when associated with epigastric distress or colicky pains. Usually, the omentum when adherent becomes extremely vascular, and presents a rather formidable appearance. Omental adhesions, however, do not forbid the completion of an operation, even when of the most extensive character, nor do they very seriously affect its result, unless the stomach or colon is intimately implicated. Whatever may be the uses of the omentum, it would seem that a large portion of it may be removed without impairing the vital powers, or very materially affecting the success of an operation. So that, even could we be certain of the existence of omental adhesions, they need not weigh much in the consideration of the propriety of an operation.

CASE CXXXV.—*An ovarian tumor with very extensive omental adhesions, and with other complications; ovariotomy; recovery.* May 1st, 1868, I visited New York to meet Professors Elliott and Van Buren in consultation in the case of Mrs. S. W. H., of San Francisco, California. She was thirty-four years old, had three children, was always regular until after the appearance of the tumor, after which there was a tendency to menorrhagia. The disease had existed about three years, the size of the abdomen sometimes diminishing and again increasing.

The abdomen was larger than that of a woman at the full period of gestation, irregular in shape, with a decided sulcus running obliquely across the abdomen from the left hypochondrium toward the right inguinal region, apparently dividing the tumor into two large cysts. The track of this sulcus was hard and resisting. The veins over the right side of the abdomen were engorged and large. The right inguinal region was occupied by solid deposits, which extended to the linea alba. Fluctuation was distinct everywhere, as in a unilocular cyst, even across the sulcus. The upper portion of the pelvis was occupied by abnormal tissue. The uterus was congested. The sound entered one inch.

Dr. Van Buren stated that her pulse had never been below one hundred per minute, and had been as high as one hundred and forty, and quite compressible; and that her tongue had been red and coated.

It was agreed to tap the patient, for the purpose of aiding the diagnosis, and also to afford her an opportunity to regain her strength by tonics, good diet, and out-door exercise. Accordingly the large trocar was entered to the left of the linea alba, and twenty-eight pints of very dark, olive-colored fluid were drawn away. It was somewhat opaque, adhesive, and coagulated by heat. When collected in the tub it looked almost black.

The tapping proved that there was but one large cyst, with a polycystic mass, flat in shape, and as large as an ordinary saucer, occupying the right inguinal region.

Diagnosis.—Ovarian tumor.

Mrs. H. came to Philadelphia, and I operated upon her, June 17th, 1868, in the presence of Drs. George Maulsby, U. S. N., J. L. Atlee, of Lancaster, T. P. Christ, of Chester, W. F. Atlee, Burpee, Keen, Mears, Cohen, and Landis, of Philadelphia. An incision was made through the linea alba about five or six inches in length, and the cyst emptied. Several parietal adhesions were next separated. The omentum was then brought into view. It was thickened and highly vascular, with immense and engorged vessels, and was spread over the whole anterior surface of the tumor like a fan, and strongly attached. It was stripped off and placed in the hands of an assistant, in order to control the hemorrhage until the operation was completed. The tumor was now separated from the sides of the abdominal wall, from the brim of the pelvis, and from the bladder, and its pedicle, which was attached to the right side of the uterus, clamped and severed.

The hypertrophied and engorged omentum was now spread out upon a napkin to examine for bleeding vessels; but there was such a general oozing of blood that it was deemed best to divide the mass into three fasciculi, and embrace each one in a ligature, so as to secure all the bleeding vessels. This was done, and five or six inches of the omentum, beyond the ligatures, were removed. The three omental stumps were secured by needles in the track of the wound, which in other respects was dressed as usual. The patient made a rapid recovery.

D. **Ovarian tumor with visceral adhesions.**—Visceral adhesions, while they are the rarest, are the most fatal complications of ovarian tumors. When a patient, during the development and existence of an ovarian tumor, has been free from pain, free from functional derangement, with pretty good general health, and without rapid emaciation, it may be inferred that the tumor has no important connections with the abdominal or pelvic organs. If, however, she has suffered at any time severe abdominal pain, accompanied by fever, indicating local or general peritonitis; if she is troubled with grave hepatic, gastric, or enteric symptoms, in the shape of jaundice, dyspepsia, stomatitis, colic, diarrhœa, or tormina of the bowels; and if she emaciates rapidly and becomes anæmic; and if, with these, there is a frequent, small, and irritable pulse, and an anxious, distressed countenance, with inability to sleep: we may infer the presence of visceral adhesions. These troubles are sometimes the result of ruptures of the cyst wall, flooding the peritoneal cavity with irritating fluids, producing the most violent symptoms, which, if they do not terminate in death, end in extensive adhesions between the tumor and abdominal and pelvic organs. In all such cases we should suspect the gravest complications.

The adhesions which occur in the pelvis, and which should be classed under the above head, can be more certainly diagnosticated. The uterus may be displaced more or less, sometimes elevated beyond reach into the cavity of the abdomen, the vagina being drawn upward with it into a cone, or funnelshaped tube, leading to it. In the majority of cases the uterus will be found elongated, as measured by the sound. The bladder may also be displaced, dragged to one or other side, or upward, and its functions more or less deranged. The pelvis may be partially or wholly occupied by the tumor, which is usually fixed and immovable. One or both of the lower extremities are generally swollen and œdematous, and the one that is first swollen usually corresponds with the ovary affected.

These adhesions of an ovarian tumor to the abdominal and pelvic organs are certainly of the utmost importance in considering the propriety of a surgical operation, while at the same time they constitute the very cases that terminate in death most rapidly when left to their own course. Should such adhesions positively forbid an operation? I think not. Recoveries, under such circumstances, are sufficiently frequent to warrant it. Of all the organs, the intestinal canal is most frequently implicated, and from its very nature forms the most formidable complication; but even this, to the extent of several feet, may be so detached from the mass that a patient may recover.

Case CXXXVI.—*An ovarian tumor with extensive adhesions of the intestines; ovariotomy; recovery.* September 4th, 1867, I visited the city of New York to see Miss H. O., in consultation with Dr. James Anderson. She was nineteen years of age, and had always enjoyed good health until the latter part of February, 1867, when she noticed an enlargement in the lower part of the abdomen, which gradually increased through March; and in the early part of April, near a menstrual period, she was suddenly attacked with extreme pain in the lower portion of the abdomen, accompanied by violent peritonitis, from which, under the care of Dr. Anderson, she recovered. About two weeks after she was taken in precisely the same way, and again recovered. This was repeated again in about two weeks, but in a much more aggravated form and with more serious results. All the attacks were so sudden that five minutes did not elapse before the most acute symptoms supervened. After the last seizure, her abdomen enlarged rapidly and became dropsical; and on the 6th of August she was tapped by Dr. Van Buren of twenty-six pints of sero-purulent fluid, which by the microscope was found to contain nothing but pus and epithelial cells. It was represented as quite opaque, and yellowish in color, and ran through the canula freely. The abdomen collapsed, and no tumor was discovered. Dr. Van Buren properly explained these attacks on the supposition that they originated through the rupture of cysts, and the flooding of the peritoneal cavity by their contents. Drs. Emmett, Elliott, and Peaslee had also visited the patient.

I examined her in company with the Drs. Anderson, senior and junior. She was much larger than a woman at full period, measuring forty-six inches round the umbilicus. Although tapped only four weeks before, she was larger than she was then. The xiphoid cartilage was tilted up at an angle of forty-five degrees. The only resonance on percussion was over the borders of the chest above the swelling. Fluctuation was distinct everywhere, as in a unilocular cyst. No ridges or nodules could be discovered by palpation. The lower limbs, particularly the left one, were swollen. Dr. A. says this was the case previously to tapping, but afterward the swelling disappeared, and that she recovered well from the operation. Menstruation had occurred but once after April.

The patient had been corpulent; but was now emaciated and anæmic, and her general system very much broken down.

I tapped her, and drew off two large pailfuls of opaque, pus-colored fluid, which did not coagulate to any extent by boiling. It ran freely through a large canula, and toward the last had a couple of small dark clots in it. As the fluid was discharged I could feel the end of the canula rubbing against a tumor back of it, which was followed by a slight discharge of blood. While engaged in tapping her, I percussed the abdomen several times, and found that the resonant points were always above the border of the swelling as the latter diminished. After all the fluid was drawn off, a very careful examination was made. The abdomen did not collapse as in ascites or in unilocular cyst, but was prominent from the umbilicus down. I could detect movable masses, like multilocular tumors, occupying that part of the abdomen, and also portions of a cyst above the umbilicus.

The patient, having always objected to an examination per vaginam, was by her consent now placed under the influence of an anæsthetic for that purpose. The hymen was firm; the os central, and somewhat thickened; the cervix full and flexed, so that the sound entered only one inch. A mass in the left inguinal region could be moved without disturbing the uterus; but one in the right side carried the uterus with it. Otherwise the pelvis was free.

I took a specimen of the fluid with me to Philadelphia, and had it examined by Dr. Drysdale. He discovered the characteristic granular cell of ovarian fluid in large quantities. Although resembling purulent fluid, it contained scarcely any of the pus corpuscle.

September 18th, I visited New York for the purpose of operating. The abdomen of the patient had again increased to nearly the same size as when last tapped; her general health had greatly declined; strength had rapidly diminished; she had become very cachectic; the tongue was quite red; the pulse was so small and frequent as scarcely to be felt, and ranging from one hundred and forty to one hundred and fifty per minute.

The following gentlemen had assembled at the house of the patient: "Mr. T. Spencer Wells, of London, England; Drs. Julius Nicolaysen, of Christiania, Norway; S. Fitch, of Portland, Maine; Andersons, senior and junior, T. S. Fitch, Fordyce Barker, Elliott, Thomas, Emmett, Burrall, and Fetter, of New York.

At my request, Mr. Wells kindly examined the patient, and coincided with me in the opinion that extirpation was the only remedy.

An incision, seven or eight inches in length, was made down to a very thin cyst, and two bucketfuls of fluid, like that removed at the tapping, were removed. The cyst was so intimately incorporated with the abdominal wall, and so thin and fragile, that it was impossible to separate it without tearing. The difficulties of the operation increased as it progressed, as the tumor seemed to have attached itself to every point with which it came in contact. Extensive coils of intestines, both large and small, were imbedded in the walls of the cyst. Indeed, the tumor seemed to be composed of intestines and cyst wall welded together. Instead of tearing through the adhesions between the bowel and cyst, I allowed a portion of the cyst wall to remain attached to the intestines, and in doing so did not interfere with the integrity of the viscera. Several feet of the intestines were treated in this way. In the posterior wall of the tumor were other cysts, containing a chocolate-colored fluid. After the tumor was removed, the implicated intestines were carefully examined, and the internal lining membrane of the attached cyst wall was stripped off, allowing the peritoneal and fibrous coats to remain. There was considerable oozing of venous blood, but only one vessel in the coat of the bowel required a ligature, for which a linen thread was used and cut off close.

Notwithstanding the extreme prostration of this patient, and the extensive parietal and visceral adhesions, she entirely recovered and regained her health.

The intestinal canal is generally found adherent to the superior, posterior, or lateral portions of the tumor, and very rarely to the anterior surface. But when, on percussion, a resonant sound is detected at a fixed point in front of an ovarian tumor, in every position of the body, it may safely be inferred that it depends upon the presence of an adherent bowel.

The bladder, when adherent, is usually attached to the anterior inferior surface of the tumor and drawn upward by it into the hypogastric region ; and this may be diagnosticated by the sound being introduced into the organ when empty and when full, and finding that it passed to the same point under both circumstances.

E. **Ovarian tumor with parietal, omental, and visceral adhesions.** In some cases we may find all these forms of adhesions—parietal, omental, and visceral—coexisting in the same case, to a greater or less extent. And yet, with all these complications, ovariotomy may be performed with success, and the patient saved from impending death.

Case CXXXVII.—*An ovarian tumor strongly adherent to the walls of the abdomen, to the omentum, to the intestines, and to the liver; ovariotomy; recovery; afterward delivered twice of healthy children at full period.* May 22d, 1867, I was consulted by Mrs. T. C., aged twenty-nine years. She first menstruated at the age of fourteen, after which the menses were suspended for ten months, and again returned and were regular. She married at the age of twenty-two years; had three children, the youngest being eight months old and at the breast.

Her abdomen was very large. It began to increase in size ten months before, when she was seven months pregnant, and grew very rapidly. The shape was uniform, fluctuation was distinct, and it was free from nodules or ridges. The uterus was *in situ*, the sound entered two and a half inches; and the pelvis was free. She measured round the waist thirty-five inches, round the umbilicus fifty-one inches, from sternum to umbilicus sixteen inches, from sternum to pubes twenty-seven inches, and between the two superior spinous processes thirty-two inches.

May 23d, I tapped her, removing fifty-five pints of thick, porter-colored fluid, which was coagulated by heat. After tapping, several small masses could be felt in the lower part of the abdomen, which were movable.

June 28th, 1867, I removed the tumor in the presence of Drs. Drysdale, Burpee, Keen, Brinton, Stewart, Caldwell, McDowell, Spooner, Hoffman, and Mustin. After making an incision, and removing by the trocar several gallons of chocolate-colored fluid, I attempted to dislodge the emptied cyst, but found it everywhere strongly adherent to the walls of the abdomen and to the adjacent viscera. Indeed, in the upper part of the abdomen, a large portion of the cyst wall was so firmly united to the liver that it was detached from the tumor and allowed to remain. After finally breaking up all the parietal adhesions, and detaching the visceral adhesions in the upper part of the abdominal cavity, allowing portions of the cyst wall to remain, the tumor was rolled out with the omentum and colon still attached to it. These omental and intestinal adhesions were so close and vascular that it was thought best to allow fragments of the cyst to remain, rather than to tear them away. Another portion of the omentum was torn off, secured by a ligature, retrenched, and afterward fastened in the upper part of the wound. The tumor was attached to the right side by a thick pedicle, having the enlarged Fallopian tube embraced in it. The clamp was applied and the tumor removed. Considerable bleeding occurred, particularly in the right hypochondriac region, directly from the vicinity of the liver. On inspecting the lower surface of the liver, it was found to be quite ragged, as if the tumor had been strongly adherent to it. Exposure to the air caused the oozing of blood gradually to cease.

The operation was followed by great and prolonged gastric irritability, but the patient had a perfect recovery. She became pregnant, and gave easy birth, at full time, to a fine child, October 31st, 1868; and again in August, 1871.

In the chapter on General Diagnosis, there is another instance, Case III., of the recovery of a patient after ovariotomy, where the tumor was universally adherent and imbedded in a layer of lymph. The operation was performed on the 27th of July, 1870, and she gave birth to a child February 29th, 1872.

CHAPTER XXIII.

PATHOLOGY OF CYSTIC TUMORS OF THE OVARY.

During the past three years I have had the opportunity, through the courtesy of the author, of assisting in a large number of his operations, and of examining some of the specimens, with their contents, after removal. Until a very recent period the examinations were not conducted with reference to the preparation of any article on the subject of ovarian pathology; this work had been assigned to another gentleman, who received the specimens immediately upon removal, and by whom investigations were made with the view of contributing a chapter to this book. Ill health, however, prevented the completion of the part assigned him, and I agreed, at the request of the author, to supply, as best I could, the deficiency.

The morbid specimens of the ovary which have been examined have embraced all the well-known varieties of cystic degeneration, with a few examples of malignant disease. Of the latter, the most frequent form met with has been that described by Rokitansky as alveolar cancer of the ovary; the next in frequency were specimens of medullary or encephaloid; and lastly, there was one specimen of scirrhous or hard cancer (fibro-carcinoma), the description of which will be found on page 392.

The colloid and medullary varieties were associated with cystic degeneration, whilst the scirrhous tumor belonged to the class of solid tumors of the ovary.

Of those specimens belonging to the class of encysted tumors proper of the ovary, the most frequent have been the multilocular or proliferous variety; the next in number were those known as the multiple; and most rare were the simple or unilocular cysts.

The frequency in occurrence of the different varieties of tumors of the ovary, benign and malignant, has been observed to maintain the proportion noted above in the former operations of Dr. Atlee, and accords, so far as can be determined from the authorities consulted, with the observations of other ovariotomists.

To the casual observer, and one unfamiliar with the mode of development of cystic growths of the ovary, it may appear strange that the simplest form should be recorded as that most rarely encountered in the operations of extirpation. The explanation of this fact may be found in the lateness of the period at which operative procedures are resorted to in the disease. It has been, and is now largely, the custom on the part of attending physicians to advise patients who are subjects of cystic disease of the ovary, to postpone operative interference until there is evidence of implication of the general health. When the disease has progressed to this stage of its development, it is believed that a progressive change has occurred in the mode of growth of the cyst,—it having passed from the condition of a simple to that of a complex form,—because of a new impetus having been imparted to the degenerative action. On the other hand, late investigations by Rindfleisch have seemed to prove that "the simple cysts are not simple from the beginning, but have arisen only by the continued fusion of adjacent cysts: all cystoids (cysts) are multilocular at the commencement."

Whichever view is accepted, the fact appears still to remain, that there is a period in the development of all cystic tumors of the ovary when they are simple in character, and it depends, therefore, upon the time at which the surgeon interferes whether he has to deal with a simple or a complex form of tumor. Experience has shown, in this respect, that operations performed early in the development of the disease are more frequently successful on account of the simple character of the tumor.

With these preliminary remarks upon the relative frequency in the occurrence of the different forms of ovarian tumors, we shall proceed to a description of those varieties which have come under observation, and, conformably to the design of the author, confine ourselves principally to an examination into the characters of those recognized as suitable for extirpation. These embrace the simple or unilocular, the multiple, and the multilocular or proliferous cysts.

The simple or unilocular cyst.—In this form of cyst the ovary is occupied by a single cell or cyst with fluid contents, which may have been developed in the superficial portions of the organ, near to the surface, or in the interior. In the event of its being of superficial origin, the tumor forces its way out, leaving the mass of the ovarian structure behind, which becomes incorporated in the wall of the cyst,—usually in the posterior portion. If the cystic degeneration begins in the interior of the ovary, a uniform distention in all directions takes place, by means of which the ovarian structure is often entirely obliterated. Sometimes in these cases the remains of the organ can be traced more frequently in those instances in which the cystic growth is superficial. According to Farre ("The Ovary," in Todd's Cyclopædia of Anatomy and Physiology), an infallible guide, by which the observer is conducted to any portion of the ovary remaining unchanged, is found in the Fallopian tube, which is spread out over the sac, and one of the fimbriæ is closely adherent to that portion beneath which the remainder of the healthy structure lies.

Coats of the cysts.—Whether developed internally or externally, the walls of the cysts are formed of the same structures, differing frequently, however, in density and thickness; this latter condition, no doubt, varies according to the locality of the cyst in the early period of its development,—whether or not it has embraced equally the mass of the ovarian substance in its walls.

The coats of the cysts are usually described as consisting of three,—the external or serous, the middle or fibrous, and the internal or epithelial lining membrane.

The external serous coat is derived from the peritoneum, —that portion forming the broad ligament,—and may be partial or entire, according to the point of origin of the cyst.

In the simple, uncomplicated form of cyst, the surface of the serous coat is smooth and glistening, free from any signs of inflammatory adhesions, and possessing the thickness of the normal membrane. Beneath this coat may be traced the Fallopian tube,—either running in close contact with the surface of the tumor, and entering, as it were, into the composition of the external coat, or, as observed in a recent specimen, embraced by the folds of the broad ligament and separated from the surface of the tumor for some distance. In the specimen above alluded to it was also observed that the fimbriated extremities floated free.

The middle tunic is fibrous in structure, and consists essentially of the "tunica albuginea," the proper covering of the ovary. It is extremely dense and firm, and affords a strong supporting tunic to the distended cyst. It varies greatly in thickness and density, these conditions having relation to the size of the cyst and the quantity of fluid contents. In the simple form of cyst this tunic is usually not very thick, and presents a uniformity in its density which is not generally found in cysts of the multilocular variety. The microscope shows it to be formed of inelastic fibrous tissue mingled with granules; its gross appearances are those of a coarse fibrous structure, which can, with some difficulty, be separated into laminæ. In order to accommodate itself to the increasing size of the cyst, and to oppose a firm but yielding barrier to the pressure exerted by the constantly increasing contents of the sac, it appears to be endowed with the power of forming new tissue, by means of which its integrity is preserved. Owing to this condition of correlative hypertrophy which exists in this coat, the rupture of an ovarian cyst is of infrequent occurrence, and the distention of the walls which takes place by the enormous accumulation of fluid has attracted the attention of all observers.

This middle fibrous coat is in some instances extremely vascular, receiving into its substance and between the external and internal coats the numerous ramifications of the ovarian arteries and veins.

Of all the tunics of the ovarian cyst, that which differs most in appearance and is subjected to greater changes is the internal or epithelial. In the unilocular form of tumor this internal lining membrane is usually found smooth, soft, and uniform in appearance. Sometimes it is thrown into folds, which become obliterated when the cyst is distended with fluid. Again, its surface may be marked by lines or bands, which we believe to be the remains of the walls of cysts, either of a secondary order of formation or of the multiple form. These cysts, having ruptured and poured their contents into the larger cyst, are obliterated, and their walls are removed by a process of slow absorption. Occasionally an opportunity is afforded to examine these cysts before the process is entirely terminated, when there may be seen a number of pockets or cavities, the walls of which are undergoing absorption. Among the specimens examined by us there were several simple cysts in which this condition was distinctly traced. (See Fig. 28.)

Examined by the microscope, this inner membrane is found to be composed of flattened epithelial cells, arranged in one or more layers, upon a basement-membrane of connective-tissue fibres. In old cysts, and, according to our observation, more frequently in compound cysts, the epithelial coat frequently presents discolored patches of a yellowish tinge. These patches indicate a state of fatty degeneration in the lining cells, by reason of which they are thrown off, and become mingled with the contents of the sac. If regeneration of the epithelial cells does not occur, the basement-membrane of connective tissue is left bare, and may become, as stated by Wilson Fox (Med.-Chirurg. Trans., vol. xlvii.), the seat of further changes. These changes may result either in a cartilaginous formation or in what has been described as calcification of the walls. From our observations, we are also inclined to believe there is a constant process of decay and renewal occurring in the epithelial lining membrane of ovarian cysts, by means of which epithelial cells become a part of the contents. In unilocular cysts this process does not appear to be so active as in the multilocular variety; and hence it occurs that among the contents of the former are fewer of these cells, and the fluid is therefore thinner and less complex in character.

These cells, after being thrown off, and possibly to a degree prior to their separation, lose their characteristic forms, and assume those which are regarded by some as diagnostic of ovarian fluids. These alterations, we presume, may take place by the attrition and disintegrating influences to which they are subjected.

In unilocular cysts the inner coat does not usually appear to be closely adherent to the middle coat, and is frequently quite thin,—so much so that the arterial and venous trunks and branches are plainly visible.

The multiple cyst.—Under this name is described that form of cyst which is simple in character, and differs from the unilocular variety in the respect that there is a development of more than one cyst in the substance of the ovary. As we shall see hereafter, these cysts are developed in precisely the same manner as the single form, and, pathologically considered, they are identical. The alterations in the coats of these cysts (which are of course the same as in the single variety) differ but little from those which are found to exist in the kind just described. If any occur, they are usually found in the condition of the internal lining membrane, and these do not involve any changes of structure produced merely by dehiscence of the walls of the aggregated single cysts. This dehiscence of the walls of the cysts results from the reciprocal pressure exerted by the coincident enlargement which occurs; and, as it frequently happens that a number of cysts are formed, the appearances may deceive as to the true character of the growth, a multiple cyst being mistaken for one of the multilocular variety.

If examined in the early stages of development, the character of the multiple cyst can be clearly traced; it will be found to be composed of an aggregation of single cysts occupying the substance of the ovary, each distinctly separated by intervening ovarian stroma. The number of these growths may differ, amounting from one to a dozen or more; they also vary in size and shape, owing to the period of time at which the morbid impulse has been imparted, and the amount of pressure which they have exerted upon each other.

The external appearance of the multiple cyst varies, being frequently irregular and nodulated. owing to the development of cysts in the substance of the ovary near to the surface; as least resistance is offered externally they develop in this direction, and form exogenous cysts. In patients with attenuated abdominal walls, these growths may be readily felt by deep pressure, and thus evidence is afforded in regard to the character of the tumor.

So far as the influence exerted upon the patient is concerned, we may regard the multiple cyst as liable to produce graver complications than the unilocular, and which at the same time are much less grave than those caused by the multilocular variety.

The multilocular cyst.—Above we have endeavored to describe the simpler forms of ovarian cysts,—the unilocular or simple, and the multiple varieties. We now come to the description of the more complex form, that known as the multilocular, compound, or proliferous. This variety differs essentially from those we have described in that it embraces a class of cysts composed of one large or parent sac, with numerous smaller cysts developed within and upon its walls. Within the smaller or secondary cysts there may be developed a third order, thus rendering the tumor most complex in character. In this form of cyst the various tunics, to a greater or less extent, undergo changes. By reason of the proneness on the part of these cysts to form adhesions to the parts and organs adjacent, the external serous membrane is frequently thickened and roughened. Sometimes these adhesions are so intimate as to cause great difficulty in determining the line of demarkation. Again, they may be so firm as to require a great amount of force to separate them. The serous membrane, therefore, instead of possessing the smooth, glistening surface of the simple cyst, is found considerably altered both in structure and appearance.

The middle fibrous coat also exhibits changes, in the shape of an increase in thickness and density, which may be uniform or which may occur at different points. This hypertrophy may be the result of inflammatory action, or it may be conservative in character: the result of the effort made to resist the constantly increasing pressure of the accumulating fluid. Sometimes this coat undergoes fatty degeneration at points, and in this way, it is thought, the rupture of ovarian cysts is accomplished. As was before noted, it may exhibit patches of cartilaginous or calcareous degeneration.

In no form of cyst is the internal lining membrane more largely affected than in this. Obviously it is altered, in appearance and arrangement, by the growths which form the distinguishing features of cysts of this character. Sometimes it is observed to be rough and thick,—marked at various points by what may be described as cicatrices, left by the rupture of the cysts developed upon the walls. Again, there may be bands of varying length stretched over the surface, which we are disposed to regard as the remains of the walls of the secondary cysts which have ruptured, undergoing a process of slow absorption. In a specimen recently under examination, there was found at one point a thin, transparent scale resembling very much in appearance the thin, transparent elastic plates of mica. It was firmly attached to the surface, and could only be detached in pieces. Its character was not definitely determined, but it was thought to be a precipitate from the fluid; which, however, in this instance, was thin, but slightly albuminous, and wanted the usual physical and microscopic characters of ovarian fluids.

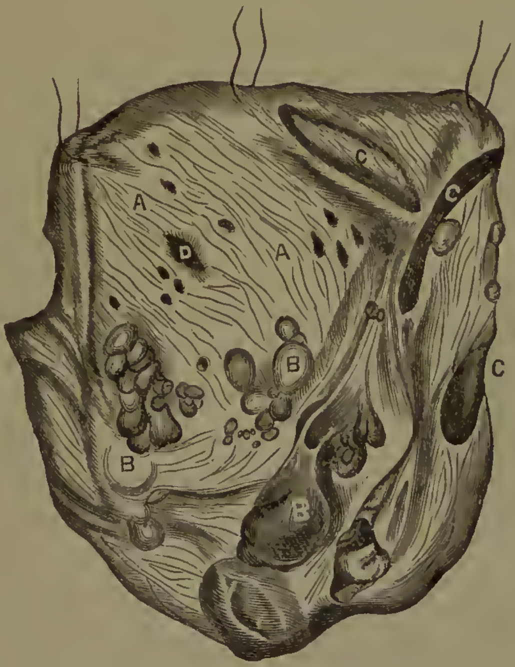
The interior of the multilocular cyst presents different appearances, according to the character of the secondary cysts of which it is composed. Hodgkin (Lectures on Morbid Anatomy, vol. i., 1836) describes three varieties,—the pedunculated, the intermediate or standard, and the flattened and broad-based form of secondary cysts. This classification embraces all the forms of secondary growths which are found in multilocular cysts. They are, no matter under what form developed, always permanently attached to the walls of the superior or parent cyst, and are covered by a continuation of the lining membrane of this cyst, which is reflected upon them. The three varieties may be found to exist in the same specimen, and they may be developed both as endogenous and exogenous growths. Within these cysts of the second and third variety are found cystic formations of a third order. These tertiary cysts are developed from the internal surface of the secondary cysts in the same manner as the latter arise from the surface of the superior or parent cyst, and they also have reflected over them the lining membrane of the cyst in which they originate. In many instances they assume the characters of the secondary cysts, in that they may arise by broad or narrow bases.

The pedunculated variety of the secondary order of cysts embraces all those which arise by narrow bases or peduncles. They are usually developed in clusters, to which fact, it is thought by some, they owe their pedunculated character, by the pressure to which they are subjected in the process of development. We have met with examples of isolated pedunculated cysts, and have found them larger than those growing in clusters. This form of cyst may grow by slender pedicles from the walls of the parent sac, or a cluster may arise by a common pedicle. Farre (loc. cit.) has observed that they are more frequently found as tertiary growths in the secondary cysts. They may terminate in a single cyst, or have a number of stems upon which are developed numerous cysts. The appearances presented by these clusters of small cysts have given to them the name of dendritic processes, and the pedicles are dense and firm, containing a prolongation of the fibrous coat of the primary cyst.

From the pedunculated variety we pass to the description of that designated by Hodgkin as the intermediate. The cysts belonging to this class are larger than those just described, and are sessile in character. They are spoken of as being "rounded elevations projecting into the interior of the principal sac." They have as a covering the lining membrane of the primary cyst, and vary greatly in size and number. Frequently their walls are very thin, and their contents pellucid. As they increase in size, they encroach upon the cavity of the parent cyst, sometimes nearly causing its obliteration. As a rule, they are unequally developed, and it often happens that those most distended force themselves outward, and thus give rise to the uneven character of the external surface of the tumor. As has been stated above, a tertiary order of cysts is frequently found developed in the inferior cysts of this variety. By reason of the pressure exerted by the tertiary cysts, which become greatly distended by their fluid contents, the walls of the inferior cysts are often ruptured, and pour their contents into the superior cyst. It is also thought that these cysts sometimes exert sufficient force by their distention to cause a rupture even of the walls of the superior cyst, thus liberating its contents.

The last variety of secondary formations, the broad-based cysts, differ from the preceding in the fact that they do not form distinct projections into the cavity of the superior cyst, but are observed to form, as it were, a thickening of the parietes; they seem as if developed between the walls of the parent cyst, and, by their growth, cause them to separate, so as to make themselves apparent both internally and externally. They form shut cavities, just as in the other varieties, and have developed within them frequently a tertiary order of cysts with broad bases. By reason of their mode of development, they appear to occupy so completely the parietes

Fig. 28.



of the parent cyst as to permit the formation of but a small cavity in it.

From the descriptions of the pedunculated and standard order of secondary cysts given above, it will be evident that the broad-based variety is the extreme type of development. A progressive change in the mode of attachment to the parietes of the superior cyst is observed as we pass from the pedunculated to the broad-based variety, which, while it is distinctive, does not seem to involve any difference in the character of the mode of development.

Fig. 28 affords a good idea of the appearances presented by the internal lining membrane of a multilocular cyst. The drawing was made from a specimen successfully removed by Dr. Atlee. At A, A is seen the lining membrane; B, B, B, clusters of secondary cysts, with thin walls and pellucid contents,—some are pedunculated, and others belong to the intermediate variety. C, C, C mark the positions of cysts of the secondary order whose walls have ruptured and are undergoing slow absorption.

Fig. 29.

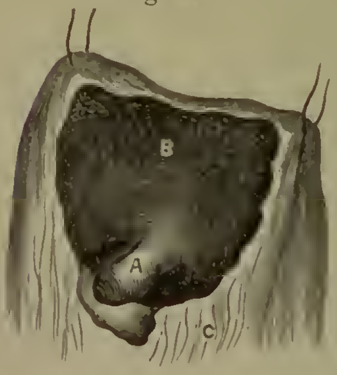


Fig. 29 is a drawing made from the same specimen, and shows in a very clear manner the arrangement of the primary, secondary, and tertiary formations in multilocular cysts. C represents the internal lining membrane cut away over B, the secondary cyst of the broad-based variety, from the floor of which springs the tertiary cyst A, by a somewhat broad pedicle.

The pedicle of ovarian cysts.—It would seem proper, in describing the various forms of cysts developed in the ovary, to make some allusion to this important part, the pedicle. Surgically considered, it claims the highest consideration; and the proper method of its treatment has been, and still is, a subject of earnest investigation on the part of ovariotomists.

The examination of a number of specimens will show a great difference in its character, and we think it may be stated as a rule that it varies according to the character of the cystic growth. We have, however, met with exceptions to this general statement in our observations,—finding a simple pedicle developed in connection with a most complex growth, and the reverse. In some instances it will be found to be a simple cord. In one case it was so small as not to require the application of the clamp, a knot being made in it, which was sufficient to control hemorrhage, and the whole returned to the abdomen. In other cases it has been found thin and broad, permitting of easy compression between the bars of the clamp; and again thick and broad, containing much dense tissue. The vascularity of the pedicle varies greatly: sometimes it seems to be entirely devoid of vessels, and again it contains numerous large ones.

In unilocular cysts it is usually narrow; if broad, it is thin and membranous, and quite compressible. In multilocular growths, on the contrary, it is frequently broad, dense, and extremely vascular.

If the entire ovary is involved in the cyst, the pedicle will be composed of the Fallopian tube, the proper ligament of the ovary, possibly a portion of the round ligament, with the broad ligament which embraces these between its folds.

The vascular supply of ovarian cysts.—The vascular supply of ovarian cysts is obtained from the ovarian (spermatic) arteries and their anastomosing branches. These are two small arteries which take their origin from the abdominal aorta, and, passing in between the laminæ of the broad ligaments, are distributed to the ovaries. When the ovaries undergo cystic degeneration, these vessels enlarge, and their branches are greatly multiplied, forming an extensive vascular network in and between the coats of the cyst. Where adhesions have formed, uniting the cyst to the abdominal parietes or the surrounding viscera, it derives nourishment also from the vessels which pass to it through the adhesions. As has been stated above, the vessels ramify in the fibrous tunic, passing from it to the internal lining membrane, which thus receives a large supply of blood. From these vessels is derived the fluid portion of the contents of the cyst, which escapes into the cavity of the cyst by the process of transudation.

In those cases where the pedicle has been found small and non-vascular, the cysts have been simple in character, or adhesions have formed from which they have derived nourishment. We have observed that, as would appear to be natural, the more complex the character of the growth, and the greater its development, the larger has been the blood-supply. In two instances it has occurred to us to meet with specimens in which there has been marked twisting in the pedicle, so much so as to interfere with, if not entirely impede, the passage of blood to the cyst, and accompanying this condition of the pedicle we have observed an apparent interruption in its development.

In multilocular cysts, the blood-vessels pass to the secondary and tertiary formations, and can be distinctly seen forming a rich network of delicate vessels in their thin walls.

The great vascularity which is observed to exist in some ovarian cysts affords an explanation of the extremely rapid accumulation of their fluid contents after tapping,—large quantities collecting in a short space of time.

The origin of cystic tumors of the ovary.—Having briefly described the cystic formations of the ovary, it remains to examine into their origin, embracing under this head their locality, and the cause which develops them. In this relation we shall confine ourselves to an investigation into the origin of those forms above described,—the unilocular, multiple, and multilocular varieties.

In reference to the determination of the point of origin of these various forms, we think it will be generally conceded that, so far as the first and second are concerned, the researches of recent pathologists have in no way modified the views entertained by the majority of the older observers. In respect to the third variety, explanations have been offered, by means of which it is proposed to account for the development of the secondary and tertiary formations in a manner not hitherto considered.

The fact that in the healthy ovary there exist, preformed, natural cysts, in the Graafian follicles themselves, would appear to present an easy solution to the question in relation to the origin of the enlarged cysts which constitute ovarian cystic disease. We have but to suppose that some morbid impulse is imparted to the natural cyst, through which its development and normal functions are interrupted, and we have at once the point of departure of the metamorphosis which results in the formation of these abnormal growths.

Although not entertained by all, still the opinion, that these cysts originate in the Graafian vesicle, is accepted by the majority of pathologists as correct and satisfactory. Rokitansky, who made this question a subject of special investigation, was willing to accept this view so far as it accounted for the formation of simple cysts whose number did not exceed the number of Graafian follicles usually found in the ovary; this number is stated by anatomists generally to vary from fifteen to twenty. When the morbid cysts, therefore, exceeded this number, he believed the view of their taking origin in the follicle to be insufficient, and regarded them as new formations, adventitious growths, which were developed from primary cells or nuclei. His later researches, however, enabled him to confirm the views entertained in reference to the follicular origin of the cysts, and, in fact, to offer absolute proof of their correctness, in that he found altered ova in those in the beginning stage of distention.

Wedl, who has also made this subject a matter of special investigation, rejects the idea of their origin in the Graafian follicle, and locates their commencement in the enlarging of areolar spaces.

According to the opinions above cited, ovarian cysts may originate in simple dilatation of a Graafian follicle from cells or nuclei, or in the areolar spaces. The weight of evidence seems to incline to the belief that in the dilatation of the Graafian follicle we have most frequently the origin of cystic degeneration of the ovary.

The origin of simple and multiple cysts.—So far as these forms are concerned, the follicular theory of development affords a satisfactory explanation of their origin and growth. We have, however, recently met with specimens in which it appeared probable that the cystic degeneration took origin outside of the Graafian follicles, in newly-created spaces, or possibly in pre-existing cavities in the areolar tissue. In the simple or unilocular variety the morbid impulse is imparted to a single follicle, which, expanding uniformly, involves the substance of the ovary, and, if located interiorly, condenses it so as to have it form, as it were, one of the coverings or coats. If the follicle involved is situated in the superficial portion of the organ, it may develop externally, having the rest of the ovary as a mere appendage.

Fig. 30.

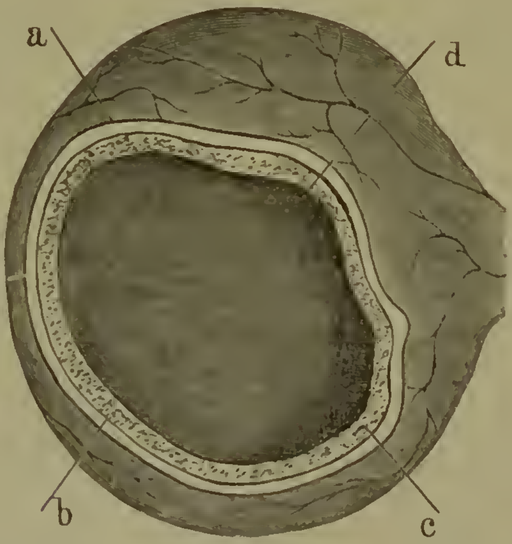


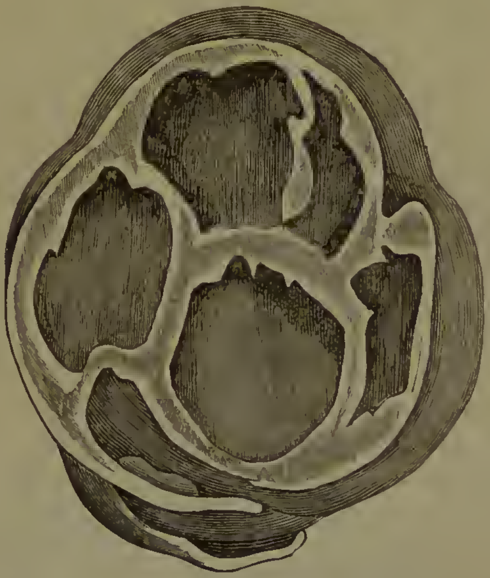
Fig. 30 exhibits the arrangement of the coats of a unilocular cyst, which has taken its origin in a Graafian follicle. It will be observed that the stroma of the ovary is represented as forming one of the tunics of the cyst. It is usual to describe but three coats or tunics as constituting the walls of ovarian cysts,—the internal, middle, and external. The ovarian stroma can be frequently traced between the internal and middle coats, and to all intents forms a covering.

In the multiple form of cyst there occurs a simultaneous distention of a number of follicles, so that, instead of one, we observe a number occupying the substance of the ovary.

These differ in size by reason of difference in date of beginning, but are in every respect identical with the simple cyst. They constitute, as before stated, merely an aggregation of single cysts.

Fig. 31 (Farre) represents the ovary occupied by a number of single cysts, constituting the multiple variety; each cyst is separately developed, a portion of ovarian stroma intervening. From this drawing it will be readily seen how the walls of these cysts come in contact, and how they may open into each other by absorption. It will also be observed that they give to the tumor an irregular outline, the superficial cysts being developed externally.

Fig. 31.



The origin of multilocular cysts.—Owing to the manner in which the secondary and tertiary formations of this variety are developed, some difficulty presents itself in the endeavor to apply to them the theory of follicular origin. When it was believed that the number of Graafian follicles in the ovary was limited, it seemed impossible to explain their development in this way. Now, however, that the microscope has conclusively shown the number of healthy vesicles to be unlimited, this difficulty is to a great extent removed. If the arrangement, which the secondary growths assume, is not consistent with the idea of their development from individual follicles, we may find a satisfactory explanation in the discovery made by Barry, "that the walls of a Graafian follicle in a natural state often contain numerous follicles of a second order." It is not difficult to suppose that these "follicles of a second order" may be impressed by the same morbid impulse as is imparted to the Graafian follicle, and thus originate the secondary growths which are the distinctive features of this form of cyst. Lebert has offered what appears to be a plausible interpretation of their mode of development, the explanation that there exists in an organ to which a cystic impulse has been given a marked tendency to the autogenous formation of cysts. This would seem to offer a ready explanation for the development of the tertiary forms, which, as has been stated above, originate from the walls of the secondary cysts.

Rokitansky has further suggested, as the most common method of origin, the formation of cysts by the breaking up of the stroma of the ovary into loculi, which are formed by membranous bands uniting at their angles, and which contain colloid or gelatinous matters. These are closely allied in character to the variety described as arising in the spaces of the areolar tissue.

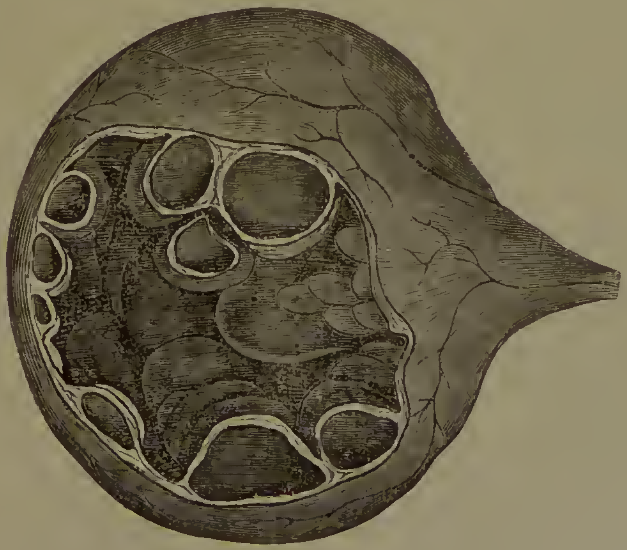
Among the specimens lately examined by us there was one in which an arrangement similar to that just described appeared to exist, associated, however, with formations of cysts which were manifestly developed in a different manner. This specimen was distinctly compound in character, having a very large parent cyst, with quite a large secondary growth projecting into its cavity, and a large mass of cysts occupying the posterior portion of the tumor. The parent sac contained a great quantity of colloid matter of a brownish or brownish-black color, while the large secondary cyst was filled with colloid substance of a honey color.

Within the secondary cyst there was a pedunculated tertiary formation about the size and shape of a fresh fig, which contained a gelatinous substance of the same color and character as that found in the parent sac. Microscopic examination of the walls of the secondary and tertiary growths showed that they consisted of a lamina of fibrous tissue lined on the interior by a layer of epithelial cells of the polygonal variety. The internal lining membrane of the parent cyst exhibited the same character of cells.

In the multilocular mass the cysts were of various sizes, and their contents varied in color and consistence. The mass appeared to be developed in the walls of the parent sac, producing, as it were, a marked thickening. The arrangement of the cysts also differed. Some were contained within trabeculæ, formed by bands of tissue, out of which they could be readily dissected and removed intact. In other instances they arose as tertiary growths from the walls of secondary cysts.

Besides the methods of origin above referred to, others have been suggested by different pathologists with a view to offer what they deem to be a more satisfactory explanation of the mode of development of the complex varieties of cystic tumors. From our observations we are inclined to believe that in the follicular theory will be found an explanation of the modes of origin of the simpler and of some of the complex varieties. With respect to some of the latter, however, we believe that their origin must be sought in some of the other

Fig. 32.



methods which have been suggested and which appear to be sufficient.

Fig. 32 (Farre) exhibits the interior of a multilocular cyst. The masses of secondary growths are shown projecting into the cavity of the parent sac.

The cause of cystic formations of the ovary.—So far as the history obtained from patients is concerned, the evidence adduced in reference to the cause which sets in motion the impulse to cystic degeneration is to a great extent negative. In the majority of the cases in which we have endeavored to obtain an exact history of the development and progress of the disease, we have found that its existence was unknown until it had so far progressed as to make itself manifest only by an increase in the size of the abdomen. Or, to make a more accurate statement, there could not be obtained, by the most direct interrogation, any history pointing to the early involvement of the ovaries, and this, we think, accords with the experience of all those who have made this subject a matter of special investigation.

Assuming, as we do, the Graafian follicle to be the seat of cystic degenerations occurring in the ovary, let us examine into the causes by reason of which it may possibly be diverted from the completion of its normal function, and degenerate into a cyst. As is well known, the follicles of the ovary are imbedded in a stroma, which is in turn inclosed in a more or less dense fibrous tunic (tunica albuginea), covered externally by a reflection of the peritoneum. In the normal process of development these vesicles approach the surface of the organ, and take a position just beneath and in contact with the fibrous investment above mentioned. By degrees the fibres of the ovarian coverings separate, and the wall of the follicle itself becomes thinner, until, finally, the laceration of all takes place, and the ovum escapes. Now, in examining this process through which the ovum is set free, it will be observed that it is somewhat complicated in character, and, for its complete fulfillment, it is essential that there should be a proper correspondence between the force which causes the follicle to rupture and the condition of the investing tunics which permits of their ready laceration. A disturbing element may exist either in the follicle or in the coverings,—in the former, interfering with its maturation, and thus giving rise to degenerative action; or, in the latter, inducing such changes as resist the separation of their fibres and laceration in obedience to the force exerted by the mature follicle.

It is quite obvious that the changes which occur in the tunics can be more readily appreciated than those which take place in the follicle itself, and it is not unlikely that they contribute largely to the causes of cystic degeneration. These changes may consist in a hyperplasia of the tunics, the result of inflammation, forming, according to Rindfleisch, "an inflammatory thickened capsule, which opposes a greater resistance than the normal to the forces which otherwise produce the bursting of the follicle." He further explains the non-bursting of the follicle in this manner: "The amount of fluid contained in the follicle may continually increase. The increasing pressure in the interior, far from bursting the follicle, rather produces a further reactive thickening of the capsule, so that the disturbance enters upon a circulus vitiosus, whose future effects we most probably may expect to be the ovarian cyst."

According to Farre (loc. cit.), the researches of Barry, made some time ago, showed that "multitudes of ovisacs perish without accomplishing their final purpose at all, and it is thought probable by the former that these, in preference to other and more healthy follicles, become the seat of subsequent morbid changes."

In the interruptions to the proper completion of ovulation, whether due to hyperplasia of the tunics of the ovary or to the non-development of the ovisacs, we think is found, to a great extent, the cause of the cystic degenerations of the ovary.

CHAPTER XXIV.

DROPSICAL FLUIDS OF THE ABDOMEN; THEIR PHYSICAL PROPERTIES; CHEMICAL ANALYSIS; MICROSCOPIC APPEARANCE AND DIAGNOSTIC VALUE; BASED ON THE EXAMINATION OF SEVERAL HUNDRED SPECIMENS.

The great number of fluids removed by Dr. W. L. Atlee from patients laboring under different forms of abdominal dropsy presenting an unusually favorable opportunity for the investigation of these products of disease, I commenced, in the year 1853, their chemical and microscopical examination.

At the time that my attention was first directed to this subject, I made a careful search for its literature, but, with the exception of the papers published by J. Hughes Bennett in the Ed. Med. and Surg. Journal, vol. lxv., 1846, found that very little had been written concerning these fluids, and scarcely any attention paid to their characteristics, except their chemical composition and general appearance. Even the descriptions given of these were often rendered worthless by the uncertainty which hung over the origin of the fluids; for although many of them were obtained by tapping the abdomen, and pronounced ovarian, ascitic, etc., yet the diagnosis may have been faulty, and was not always made certain by any further history of the case, by an operation, or an autopsy. And now, in taking up the matter again, and hurriedly writing this chapter, as has been done while engaged in a laborious practice, the time has not been sufficient to make a thorough search of the medical journals for papers published since then, and it may be that valuable information has been thus overlooked. But that this subject has not received the attention it merited, may be inferred from the writings of even the more recent authors. Thus, Prof.

Simpson observes, "There are no deductions of any practical import, so far as I know, to be drawn from the contained or evacuated fluid."* And others have expressed themselves just as decidedly, as unbelievers in their diagnostic value.

That this field has been left ungleaned by the vast number of workers in our profession, must be attributed to the difficulty of obtaining specimens numerous enough to afford any decided conclusions. I may therefore consider myself fortunate in having had the opportunity of obtaining results which, it is believed, will prove of the greatest service in this difficult branch of diagnosis.

In selecting specimens to illustrate the facts brought forward in this chapter, only those have been used the source of which is certainly known and proved; and to show that there has been abundant material from which to choose, it may be stated that up to the present time I have examined several hundred dropsical fluids, analyzed a large number of them, and have made a careful drawing of their microscopic appearance with the aid of the camera lucida. In making these drawings, the same magnifying power has been used in all, which was a one-fifth objective; this, with the eye-piece, giving a power of three hundred and fifty diameters.

In the chemical examination, the principal object kept in view has been to make the method followed as plain and easy of execution as could be done without interfering with the correctness of the analysis, so that the same plan might be adopted in the investigations of others; thus, by comparison of results, making them of practical value to our profession. For this purpose the outlines of a plan for analysing these fluids have been given, which are to be regarded as merely indicating the method which has been followed in making these examinations, without giving the minute details, which can be found in Simon's Chemistry of Man, Griffith's Practical Manual of the Blood and Urine, or Bowman's Medical Chemistry.

An analysis, thus performed, will acquaint us with the principal constituents of the fluid, and this is all that is practically important for us to know. If, however, the dropsy is the result of disease of the kidneys, or liver, of course we should, in addition, seek for the peculiar products found in the blood in the diseased conditions of these organs, such as urea, or the constituents of the bile, and which we should naturally infer would exist in fluids derived from the blood; but it would be a waste of time to search for them in ovarian fluid, or in the fluid of ascites depending on mere effusion, when these organs are in a healthy condition. It has also been thought unnecessary to point out the methods of ascertaining the exact variety or modification of albumen contained in ovarian fluids, such as the metalbumen and paralbumen of Prof. Scherer, as their practical importance has not yet been determined. In fact, "In consequence of the immense labor attendant upon a complete analysis of these fluids, it becomes expedient to confine our attention to their most important constituents, in the same manner as the mineralogist seeks only to determine the proportion of ore in a given quantity of a mineral, or the vegetable analyst to ascertain the proportions of sugar, gum, starch, and albumen, while he neglects the non-nutritive substances, the fibre, acids, resins, coloring matters, etc."*

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* Clinical Lectures on Diseases of Women, p. 307.

In looking at the apparently barren results of numberless analyses of these organic fluids, practical men of our profession have sneered at such labors as useless; but it is hoped it will be proved in these pages that at least one point has been gained, and that in the chemical examination of these fluids, more particularly when assisted by the microscope, we have a valuable aid to diagnosis, and one nearly infallible.

General remarks concerning dropsical fluids and their examination.—When a dropsical fluid is given us to examine we must note:

1st. *Its color, odor, and general appearance*, such as its transparency or opacity, and the absence or presence of a deposit, or any substance floating in it, as cholesterine, flocculi, or a coagulum of fibrin. Also the consistence of the fluid, as its thinness or thickness, its viscidity, or its gelatinous character.

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* Simon's Chemistry of Man, p. 82.

2d. *Its specific gravity.*—This must be obtained either with the specific gravity bottle, which is the best, or with a good urinometer or hydrometer, the accuracy of which is known.

3d. *Its acidity or alkalinity*, or its being neutral, which is to be determined by its reaction with turmeric and red and blue litmus papers.

4th. *The amount of water and of solid matter.*—Weigh five hundred grains* of the fluid in a porcelain capsule, place on a water-bath, or in a drying oven, and evaporate to dryness. Weigh the solid matter left. We thus obtain the amount of water and of solid residue.

5th. *The amount of fibrin.*—When fibrin is present, weigh the liquid, then filter it and wash the fibrin left on the filter with water, alcohol, and ether; having well dried it, weigh and calculate how much would be contained in one thousand grains.

6th. *The amount of albumen.*—Test for albumen by boiling. Should the fluid be alkaline, first neutralize with acetic acid and then boil.

When albumen is present, weigh five hundred grains of the fluid, slightly acidify with acetic acid, and boil, and, when the albumen is in small quantity, filter with a filter of which the weight is known. Wash the albumen with ether, alcohol, and water slightly acidulated with hydrochloric acid, in succession. Then dry and weigh, deducting the weight of the filter.

Should there be a large amount of albumen, it is better to coagulate and evaporate to dryness, then pulverize, place on a filter and proceed as before.

7th. *The analysis of the solid residue* [after Griffith]. (1) Pulverize the residue left after the evaporation of the water (see above), place on a filter and treat with boiling ether until all the fat is removed. The ethereal solution, which should be collected in a capsule, is then to be heated to expel the ether, and weighed to obtain the amount of fat.

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* 500 grains are used in place of 1000, to expedite the process.

(2) Treat the residue on the filter with boiling distilled water, which dissolves the alkaline salts and extractive matters and holds them in solution (a), and leaves the albumen and earthy salts (b) on the filter.

(3) Evaporate the solution (a) to dryness, and weigh the dry residue; pulverize this and exhaust it with alcohol, which dissolves the chlorides of potassium and sodium with some extractive matter. Evaporate the alcoholic solution to dryness, and weigh to obtain the amount of chlorides of potassium and sodium. If any extractive matter is present, incinerate, which will dissipate it, and then weigh.

(4) To the portion left undissolved by the alcohol add acetic acid until it is saturated, evaporate to dryness, and again add alcohol, which dissolves the acetate of soda; evaporate this solution to dryness, and incinerate. We thus obtain the carbonate of soda.

(5) The residue left unacted upon by the acetic acid and alcohol consists of the phosphate and sulphate of soda.

By deducting the weight of the salts from the original weight of the dry residue of (a), we obtain the amount of extractive matters.

(6) Incinerate the insoluble portion (b) left on the filter and burn off the albumen, which leaves the earthy salts.

If it is not considered necessary or desirable to make a thorough examination of the fluid, or if the time cannot be spared, a rough estimate of the amount of albumen contained in the specimen may be obtained by boiling, or adding nitric acid or the bichloride of mercury: then all after obtaining its specific gravity may be omitted, and the microscopic appearance at once noted.

8th. *Its microscopic examination.*—The fluid should be examined by the microscope as soon as possible after its removal from the abdomen, as decomposition generally occurs in these substances very rapidly, especially in warm weather, and may destroy the structure of the cells. But this does not always happen, for I have examined fluids several weeks after they have been taken from the body, and could readily detect their peculiar microscopic characters.

The examination of dropsical fluids is very simple. A drop or two of the specimen is transferred, by means of a glass rod or a small pipette, from the vessel containing it to a glass slide; the drop is then covered with a piece of thin glass, placed under the microscope, and examined. By raising the edge of the thin glass cover we can introduce acetic acid, ether, ammonia, iodine, or any reagent we may wish to employ, and watch the result.

When we find the fluid almost free from cells, several ounces of it should be placed in a conical glass, and allowed to stand for six or eight hours, when a pipette, with a finger covering its upper end, should be introduced to the bottom of the glass; the finger should then be a little raised, and a small quantity of the fluid allowed to enter the tube. By replacing the finger we can then transfer the deposit to the glass slide. In this way we can detect, with certainty, the presence of even a very small number of cells in a fluid.

Fluid of ascites.—The most frequent form of abdominal dropsy met with is ascites, and the fluid of this being the one which is oftenest submitted to us for examination, naturally leads us to consider it first.

Ascitic fluid is generally odorless, limpid, of a pale straw color, very thin, and free from sediment, but frequently contains a small coagulum of fibrin. All these properties, however, are subject to variation in different specimens.

Odor.—It is very rare to meet with a fluid of this kind having an appreciable odor when just removed from the body, but sometimes it has a well-marked animal smell. Occasionally a fluid is met having a putrescent odor. When we find a specimen possessing this peculiarity, we can at once perceive, from its offensiveness, that it is owing to decomposition. This sometimes occurs in consequence of an admixture with air, which has found entrance into the abdominal cavity. The soup-like or osmazome odor I have never detected in this variety of dropsical fluid.

Transparency.—Instead of the clear fluid which we usually see we may find it turbid like whey, or milky like starch-water, or so clouded by the products of inflammation as to resemble soap-suds, or even rendered perfectly opaque by the amount of these matters which it contains.

Color.—This also varies, depending to a great extent on the amount of blood or coloring-matter of bile united with it. Thus it may be of a pale straw color, or of a deep yellow tinged with green, or of a light red, a deep red, in fact all the shades of color which serum would obtain by mixing in different proportions with blood or bile.

Consistence.—A variation in the consistence of these fluids is also found, but a thick ascitic fluid is comparatively rare, and when met with, will be seen to depend for this peculiarity upon the amount of inflammatory products contained in it.

Sediments, etc.—The solids which we find in the form of sediments, and held suspended in these fluids, vary in quantity and quality; thus, we may have a transparent fluid perfectly free from deposit, another may show a small coagulum, another a very large coagulum, resulting from the amount of fibrin contained in them, another may present a copious flaky deposit, while still another may be so loaded with purulent matter as to resemble pus.

General chemical characters.—*The reaction* of these fluids is generally alkaline, rarely neutral.

Their specific gravity varies from 1008 to 1032, from 1016 to 1020 being oftenest met with.

The chemical properties of ascitic fluids, like their physical, also differ. This is most strikingly displayed in the variation in the amount of albumen which they contain. We may find such a small quantity present as to merely render the fluid milky when boiled, or on the addition of nitric acid; or it may become thickened and perfectly opaque when boiled; or, if the amount of albumen is very great, we may find it become nearly solid when submitted to the same test.

The quantity of fibrin also differs very materially in the various specimens of these fluids, and may vary from a barely perceptible filmy coagulum to a dense coagulum filling one-half of the containing vessel.

The salts found in these, as in all animal fluids, differ in amount in all of the specimens examined, but a well-marked peculiarity is seen in the excess of chloride of sodium contained in the fluids free from inflammatory products.

The quantity of fatty matters present is generally small, and in most cases is a mere trace.

General microscopic characters.—Many of the specimens are free from objects, a clear liquid only being seen; others contain a few epithelial cells which have often a shrivelled appearance, while in those produced by irritation, we find, in addition to the epithelial cells, blood corpuscles, oil globules, and occasionally a cell which resembles the pus cell in appearance. When the effusion is the result of inflammation, or when inflammation has occurred during the continuance of another form of effusion, pus cells and other products peculiar to this condition are seen. In old effusions crystals of cholesterine are sometimes found.

The varieties in the color, consistence, etc., of these fluids are not without practical interest, for we find that many of these peculiarities are frequently associated with, or dependent upon, the diseased conditions giving rise to the effusion, and are so well marked that they indicate a natural division of the subject, which will be followed in describing the fluids. For this purpose we may divide ascitic fluids into three varieties:

1st. *That of simple effusion, depending upon an obstructed circulation.*

2d. *Effusion depending upon an irritation of the peritoneum, independent of vascular obstruction, as, for instance, by a fibroid tumor of the uterus.*

3d. *Effusion depending on inflammation of the peritoneum.*

1st. *Ascitic fluid of simple effusion.*—In effusion depending upon an obstructed circulation, as in some forms of disease of the heart, liver, spleen, or kidneys, or the pressure of a tumor upon the large vessels, etc., we find a clear, thin fluid of a pale straw color, free from fibrin, or, if present, in very small quantity, and containing no sediment. The specific gravity is low, and the amount of contained albumen comparatively small.

Microscopic characters.—A clear fluid is seen, sometimes entirely free from objects, at others containing a few epithelial cells, oil globules, and blood corpuscles, which are often only found after a prolonged search. This scarcity, and in many instances, entire absence of cells, is the most striking feature in the microscopic appearance of these fluids.

The peculiarities of this form of ascites are shown in the following cases:

Case CXXXVIII.—*August 21st*, 1860. *C. P., a feeble, cachectic woman, twenty years old; abdominal dropsy of four months' duration, which was proven to depend on a diseased liver by a post-mortem examination one year later.* I removed from this patient, by tapping, twenty-two quarts of a thin, pale straw-colored fluid, containing no deposit or coagulum after standing several hours. The fluid was alkaline, specific gravity 1012. Acetic acid caused it to become cloudy, and boiling coagulated it so that it became white and opaque.

On analysis it yielded, in one thousand grains,—

	Grains.
Water	970·0
Solid matter	30 0
Albumen	18·5
Salts	8·2
Extractive matters	3·0

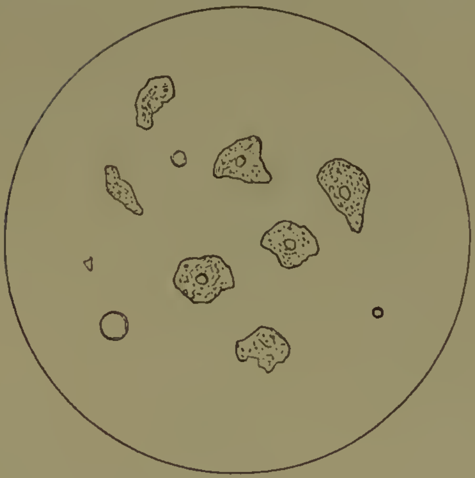
The salts consisted almost entirely of chloride of sodium. *Microscopic examination* proved the fluid to be free from cells.

Case CXXXIX.—*September 18th*, 1855. *E. L., aged forty-three years. Disease of liver following intermittent fever, resulting in dropsy, and death in two years. Autopsy revealing a greatly enlarged, fatty liver.* The fluid removed from this woman was thin, nearly transparent, and of a light straw color tinged with green. On standing a small coagulum formed in it. Its reaction was neutral. Specific gravity 1010. One thousand grains contained,—

	Grains.
Water	968·0
Solid matter	32·0
Albumen	22·2
Fibrin	0·5
Salts and extractive matter	9·1
Fat	trace

The salts in this, as in the last, consisted almost entirely of chloride of sodium.

Fig. 33.

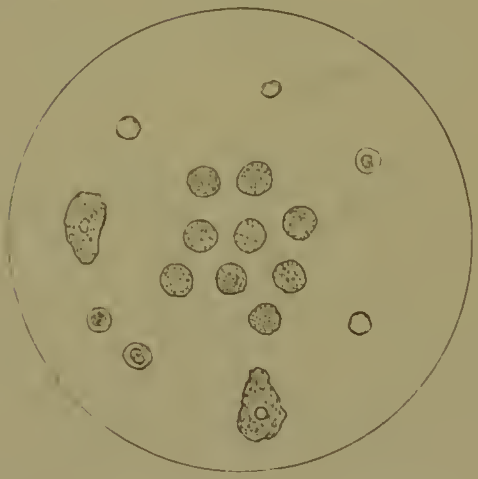


Microscopic examination revealed epithelial cells and oil globules, which are represented in the drawing (Fig. 33).

2d. *Ascitic fluid, the effusion depending upon irritation of the peritoneum.*—This form of effusion depends upon an irritation of the peritoneum produced by the presence of a fibroid tumor of the uterus, or by any growth which merely irritates the surface without producing inflammation or obstructing the circulation. In this variety we find the fluid transparent, thin, and usually darker in color than the last; but in this respect it differs very much, and we may find it of all shades from a pale straw to a deep amber color. It always contains a coagulum of fibrin, often of considerable size, and is frequently mixed with blood. This fluid has a higher specific gravity than the one last described, and is richer in albumen.

Microscopic characters.—In this we find not only the epithelial cell derived from the peritoneum, but blood corpuscles and oil globules. Specimens of the fluid are occasionally met with, containing objects, in addition to these cells, which in size and appearance resemble the pus cell, but which show no nuclei on adding acetic acid. Their surface is generally granular, but occasionally appears finely wrinkled. They differ from the ovarian granular cell in being semi-opaque, in their appearance, which does not present the clearly defined granules of the ovarian cell, and in their being of a uniform size, one-two-thousandth of an inch in diameter. They are represented in the centre of Fig. 34. These cells

Fig. 34.



are here described particularly, not that they are believed to be peculiar to this fluid, but in order to guard against an error in diagnosis, as they have been mistaken for the ovarian cell. In this variety we are also likely to meet with cells belonging to the growth producing the effusion, especially if the tumor is of a malignant nature.

Case CXL.—*September 28th*, 1854. *Mrs. M. Ascites, the result of an abdominal tumor.* The fluid was thin, transparent, and of a light straw color. After standing a few hours a coagulum formed in it. Its reaction was alkaline. Specific gravity 1020.

On analysis it yielded in one thousand grains,—

	Grains.
Water	953·5
Solid matter	46·5
Albumen	28·3
Fibrin	2·0
Salts	8·5
Extractive matters	5·9
Fat	1·4

Microscopic examination.—The fluid was clear, and contained some small coagula of fibrin, a few degenerated epithelial cells of a dark yellow color and destitute of nucleus, and oil globules.

Case CXLI.—*Miss D. Ascites, resulting from the presence of a fibroid tumor of the uterus.* This was a thin, transparent fluid, of a dark amber color, and contained a coagulum. Alkaline reaction. Specific gravity 1020. When boiled it became nearly solid.

The analysis gave,—

	Grains.
Water	948·0
Solid matter	52 0
Albumen	32·0
Fibrin	2·5
Salts	11·9
Extractive matter	4·0
Fat	0·7

Microscopic appearance.—It contained epithelial cells, blood corpuscles, oil globules, and a number of the cells resembling pus cells which are described in the general microscopic characters of this variety of fluid, and are accurately represented in the drawing of this specimen (Fig. 34). No change in the appearance of these cells was perceived on adding acetic acid.

3d. *Ascitic fluid the result of inflammation of the peritoneum.*—In this variety the fluid differs in all its properties from the two last described. It is much thicker and more viscid than either of the others, is always cloudy, more or less turbid, and frequently opaque. In color it may resemble whey, or soapy water, or be of a whitish-yellow, or greenish-yellow, like pus. A deposit is always present, and it is in this kind that we occasionally meet with a heavy animal odor, and, at times, the odor of decomposition.

Its specific gravity is higher than in the other varieties, and it contains a much larger proportion of albumen. The fibrin, if the fluid has been removed in the early stage of the inflammation, is abundant and semi-transparent, but if withdrawn when the disease has become chronic, is in thick opaque clots, or more frequently in the form of flakes.

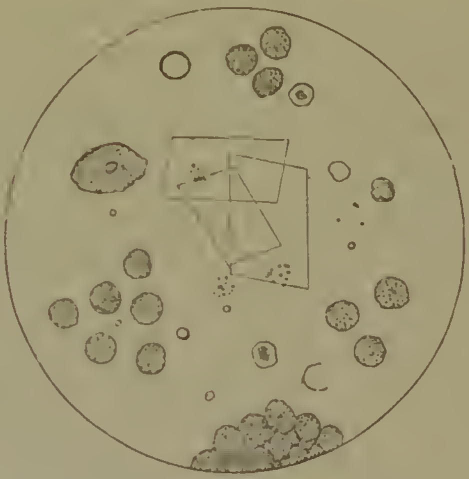
Microscopic characters.—The microscope shows this fluid to be rich in objects, and although the pus cells are the most abundant, yet epithelial cells, Gluge's cells, granular matter, blood corpuscles, cell débris, oil globules, and crystals of cholesterine may all be present.

CASE CXLII.—*April* 21*st*, 1855. *Miss M. Chronic peritonitis,* *produced by the growth of an abdominal tumor.* The fluid was thick, viscid, perfectly opaque, and of a greenish-yellow color, resembling pus in appearance. It had a heavy, sickening odor. On standing, it separated into a clear yellow fluid and a creamy deposit. Alkaline; specific gravity 1032. It contained in one thousand grains,—

	Grains.
Water	901·2
Solid matter	98·8
Albumen	64·9
Extractive matters	11·7
Alkaline salts	6·4
Earthy salts	8·5
Fat	6·5

Microscopic examination.—A cloudy fluid containing a few epithelial cells, oil globules, crystals of cholesterine, and cell débris, was seen, but the field was principally occupied by pus cells, which displayed their nuclei on adding acetic acid. (See Fig. 35.)

Fig. 35.



This variety resembles many specimens of ovarian fluid in its physical, chemical, and microscopical characters. They are therefore liable to be mistaken for each other, but the microscope will determine the diagnosis. If on the addition of acetic acid the cells become transparent and show their nuclei, the fluid is pus. If, on the contrary, no change is produced in the cell, except to render it a little more transparent and display more clearly its granular form, the fluid is ovarian. Such are the different kinds of ascitic fluid most frequently met with, but in addition to these well-marked varieties we find others having mixed properties, and bearing some resemblance to each of the three, being as it were compounds of two or all of them.

Fluid of peritoneal cysts, or cysts of the broad ligaments.—Resembling ascitic fluid in many of its properties, but differing widely from it in others, is the fluid removed from the cysts of the broad ligaments. As it runs from the canula the fluid in this peculiar form of dropsy is *perfectly colorless, transparent and thin, like pure water*, and presents this appearance also when viewed in bulk, as in a tub or bucket, into which it has been poured. But when placed in a test-tube, and held up to the light, it is frequently seen to be very slightly opalescent, as if a drop of milk had been diffused through it. Its specific gravity is very low, ranging from 1004 to 1009. Its reaction is feebly alkaline. When boiled it sometimes becomes a little cloudy; generally, however, it remains clear, but if acetic acid is added before boiling, it invariably clouds, showing that the small amount of albumen present is in the form of an albuminate. Its further chemical examination proves it to be rich in chloride of sodium,—in fact, this is the principal solid constituent found in it.

Microscopic characters.—A few epithelial cells are sometimes discovered, but generally the microscope proves the fluid to be perfectly free from objects.

CASE CXLIII.—*J. C., February 22d*, 1855. This was a transparent, thin, colorless fluid, very slightly opalescent when viewed by transmitted light. Its reaction was alkaline. Specific gravity 1004. No opacity was produced by nitric acid, nor on boiling after adding the acid.

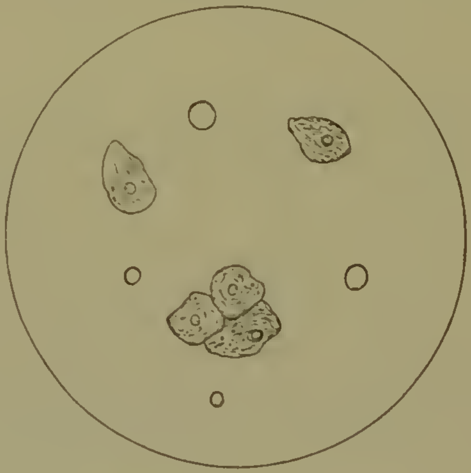
In one thousand grains it contained,—

	Grains.
Water	988·0
Solid matter	12·0
Salts	11·5

The residue left after the evaporation of the water consisted almost entirely of chloride of sodium, there being but a trace of other salts.

Microscopic examination.—A perfectly clear fluid, containing a few oil globules and epithelial cells. (See Fig. 36.)

Fig. 36.



Case CXLIV.—*March* 1*st*, 1872. *Mrs. W., aged thirty years. Cyst of broad ligaments; twenty-three pints of fluid removed by tapping; subsequent medical treatment; no return of the dropsy.*

The fluid removed was thin, clear and colorless as water, but when placed in a bottle and held up to the light appeared as if a drop of milk had been mixed with it. It remained clear when boiled, but the addition of nitric acid produced a cloudiness. Its reaction was alkaline. Its specific gravity 1008.

In one thousand grains it contained,—

	Grains.
Water	995·3
Solid matter	4·7
Albumen	0 5
Chlorides of sodium and potassium	2·0
Phosphate and sulphate of soda	0·7
Carbonate of soda	1·5

Microscopic examination showed it to be entirely free from objects.

The above cases are sufficient to show that the peculiarities of this fluid are its close resemblance to pure water in appearance, its low specific gravity, and the small amount of organic matter contained in it.

Ovarian fluids.—In no other dropsical fluids do we find such diversity in all of the physical characters as we do in these. In addition to this, we discover in them many peculiarities, which will be pointed out in describing their properties, and the knowledge of which is useful as an aid in establishing our diagnosis.

Odor.—In most of these fluids, when freshly drawn from the body, there is an animal odor, in some very faint, but in others so strong as to attract the attention to it at once. In a few specimens this has resembled that peculiar smell called the soup-like or osmazome.

Transparency.—They are rarely clear, generally more or less cloudy, sometimes turbid, and frequently opaque.

Color.—This varies from being almost colorless like white of egg, or clear-starch, or whitish like starch-water, through the various shades of yellow, red, and green, to a dark olive, or a dark chocolate-brown, and in rare cases has been seen as black as ink.

Consistence.—They may be nearly as thin as water, or like a thin syrup, or mucilage, or oil, or as thick as molasses, or ropy, like white of egg or soft-soap, or even so thick as to refuse to flow through the canula, and resembling jelly; but no matter what their consistence may be, when rubbed between the fingers they are found to be sticky and viscid, and often have a slimy feel.

Sediments, etc.—A sediment is almost invariably present in these fluids, and if not formed at once, occurs after standing a few hours. This sediment is usually more viscid than the fluid itself, and often resembles pus in appearance. A deposit of thick, opaque flocculi, which may be white or colored, is also common. Cholesterine is often present, diffused through the fluid in the form of glistening plates or crystals, which may be in such quantities and so large as to be seen with the naked eye, and frequently form a pellicle on the surface.

The reaction of these fluids is usually alkaline, but sometimes neutral. The specific gravity in the specimens which have been examined has ranged from 1009 to 1045, about two-thirds of them being over 1020.

Chemical characters.—The chemical constituents of ovarian are almost the same as those found in other dropsical fluids. They consist principally of albumen, extractive matters, fat, and salts united with water. But these differ from the other fluids in the excessive quantity of solid matter which they contain, for in analyzing them it will be found that there is a very large amount of solid residue left after evaporation, reaching in some cases to one-tenth of the whole weight of the fluid. This excess of solids is mainly owing to the great amount of albumen, or its modifications, which they hold in solution.

Another constituent found in larger amount in ovarian than in other dropsical fluids is fat, in its various forms.

But the most important chemical point of difference between these and most of the other dropsical fluids is the fact that *ovarian fluids contain no fibrin*, when inflammation of the cyst, or hemorrhage into it, has not occurred.

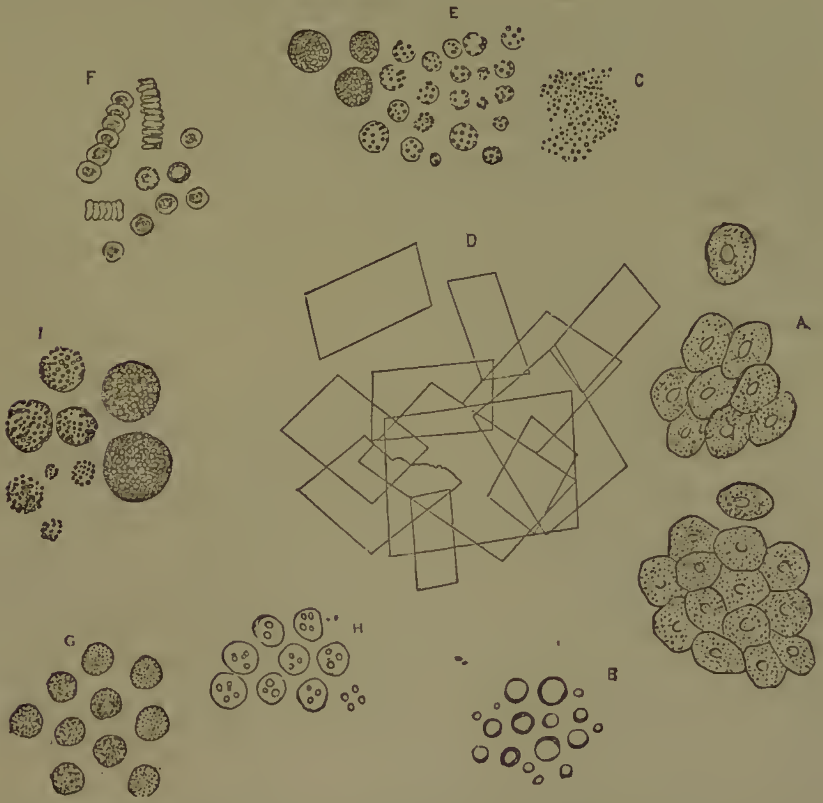
Microscopic characters.—The microscope usually displays a number of granular cells, Fig. 37, E, some free granular matter, C, and small oil globules, B; and frequently, in addition to these, epithelial cells of various forms, A, and crystals of cholesterine, D. These, together with blood corpuscles, F, the inflammatory globules of Gluge, I, the pus cell, G H, and disintegrated blood and other cells, may all be sometimes seen floating in either a clear or a turbid fluid.

To find them all present in one specimen, however, is rare; more commonly we can discover but three or four of them in the fluid. *But, no matter what other cells may be present or absent, the cell which is almost invariably found in these fluids is the granular cell.*

This granular cell, in ovarian fluid, is generally round, but sometimes a little oval in form, is very delicate, transparent, and contains a number of fine granules, but no nucleus. The granules have a clear, well-defined outline. These cells differ greatly in size, but the structure is always the same. They may be seen as small as the one-five-thousandth of an inch in diameter, and from this to the one-two-thousandth of an inch; in some instances I have found them much larger, but the size most commonly met with is about that of a pus cell.

The addition of acetic acid causes the granules to become more distinct, while the cell becomes more transparent. When ether is added the granules become nearly transparent, but the appearance of the cell is not changed. (Fig. 37, E.)

Fig. 37.



This granular cell may be distinguished from the pus cell, lymph corpuscle, white blood cell, and other cells which resemble them, both by the appearance of the cell and by its behavior with acetic acid.

The pus and other cells, G, which have just been named, have often a distinctly granular appearance; but the granules are not so clearly defined as in the granular cell found in ovarian disease, owing to the partial opacity of these cells; and, when the granular cell of ovarian disease and the pus cell are placed together under the microscope, this difference is very apparent. In addition to the opacity of these cells, we frequently find their cell wall appearing wrinkled rather than granular; and further, in the fresh state, they are often seen to contain a body resembling a nucleus.

But, if there is doubt as to the nature of the cell, the addition of acetic acid dispels it; for, if it is a pus cell, or any of the cells named above, it will, on adding this acid, be seen to increase in size, become very transparent, and nuclei, varying in number from one to four, will become visible. (See G, pus cell before adding acid; and H, pus cell after adding acid.) Should the cell, however, be an ovarian granular cell, the addition of this acid will merely increase its transparency and show the granules more distinctly.

This ovarian granular cell I consider as diagnostic of ovarian dropsy, and have seldom failed to find it in this fluid, except in some of the earlier cases, where it probably existed but was overlooked from inexperience in the examination of these specimens.

The next important cell revealed by the microscope is the epithelial. Of this, many varieties are found, such as the columnar, tessellated, etc., some of them in a sound, healthy condition, but more in a state of fatty degeneration. The drawing, A, shows the forms of these cells most frequently seen in the fluids which have been examined. When we consider that these cells are derived from the epithelial lining of the walls of the cysts, we might naturally expect to see them in all ovarian fluids, yet they are frequently absent, but, when present, are valuable as an aid in diagnosis.

The compound granular cell, I, the granule cell of Paget and others, or inflammation corpuscle of Gluge, is also occasionally present in these fluids, and might possibly be mistaken for the ovarian granular cell; but it is not difficult to distinguish them from each other. Gluge's cell is usually much larger and more opaque than the ovarian cell, and has the appearance of an aggregation of minute oil globules, sometimes inclosed in a cell wall, and at others deficient in this respect. The granules are coarser, and vary in size, while the granules of the ovarian cell are more uniform and very small. By comparing them in the drawing, these differences will be apparent. Again, the behavior of these cells on the addition of ether will at once decide the question; for, while the ovarian granular cell remains nearly unaffected by it, or, at most, has its granules made paler, the cell of Gluge loses its granular appearance, and sometimes entirely disappears through the solution of its contents by the ether.

The only crystalline form seen in ovarian fluid is cholesterine. This is often present in great quantities, and the crystals are frequently so large, that they give a glistening or sparkling appearance to the fluid, and on rising to the surface may be seen with the unaided eye. But this substance is not peculiar to ovarian fluids, for it may be found in the fluid of ascites, although far more rarely.

These are the principal objects seen with the microscope in ovarian fluids, when the cyst has not been inflamed. If this has occurred, however, in addition to the objects already mentioned, we meet with the products of inflammation, as the pus cell, etc.

Examples of the varieties of ovarian fluids most commonly met with will be found in the following cases:

CASE CXLV.—*December 5th*, 1855. *Mrs. H. Fluid obtained from an ovarian cyst by paracentesis abdominis; subsequent operation and removal of the tumor.* This was an odorless, semi-transparent, thick, viscid fluid, resembled honey in color, and contained flocculi. It was so glairy that it could be drawn out in strings. A deposit of white flakes formed on standing. Its reaction was alkaline. Its specific gravity was 1022.

In one thousand grains it contained,—

	Grains.
Water	936·0
Solid matter	64·0
Albumen	50·0
Salts	7·2
Extractive matters	5·2
Fat	1·5

Microscopic examination.—In a liquid, cloudy from granular matter, floated epithelial cells, which had undergone fatty degeneration, and the clear, granular ovarian cell. The flakes were composed of an aggregation of these same objects.

CASE CXLVI.—*February 7th*, 1856. *Mrs. C. Fluid from an ovarian cyst, obtained by tapping: the patient afterwards operated upon and the tumor removed.*

An odorless, thick, opaque fluid of a grayish-yellow color, and contained no deposit. It had a glutinous feel when rubbed between the fingers; when boiled it almost entirely coagulated. Its reaction was alkaline; specific gravity, 1032.

In one thousand grains it contained,—

	Grains.
Water	898·6
Solid matter	101·4
Albumen	86·2
Salts	5·5
Extractive matters	6·0
Fat	3·2

Microscopic examination.—The field was covered with the ovarian granular cells, granular matter, oil globules, and blood corpuscles.

CASE CXLVII.—*August 6th*, 1856. *Miss S. C. Fluid taken from an ovarian cyst by tapping; the tumor afterwards removed by an operation.* In consistence this fluid resembled a thin mucilage. It was a pale straw color, cloudy and turbid, with white flakes floating in it. On standing, a copious deposit occurred. It became opaque and white when boiled, but did not solidify.

Its reaction was neutral; its specific gravity was 1010.

In one thousand grains it contained,—

	Grains.
Water	974·0
Solid matter	26·0
Albumen	12·5
Salts	8·1
Extractive matters	4·3
Fat	0·5

Microscopic examination revealed degenerated epithelial cells, ovarian granular cells of various sizes, some of them very large, and crystals of cholesterine in abundance. The flakes consisted of cholesterine, granular cells, and oil globules held together by some viscid substance.

Case CXLVIII.—*May 15th*, 1856. *Mrs. B. Fluid obtained by tapping an ovarian cyst; the tumor subsequently removed by an operation.* A very thick, glutinous, opaque, whitish-yellow fluid, having a decided animal odor; examined immediately after its removal from the abdomen, and then contained no sediment. When boiled, it coagulated so completely that the test-tube could be inverted without spilling a drop.

Its reaction was neutral; specific gravity, 1022.

In one thousand grains it contained,—

	Grains.
Water	932·0
Solid matter	68·0
Albumen	44·5
Salts	9·5
Extractive matters	10·7
Fat	3·0

Microscopic examination.—The ovarian granular cells and granular matter were the only objects seen.

Case CXLIX.—*May 1st*, 1856. *Mrs. McG. Fluid taken from an ovarian cyst by tapping; the tumor afterwards removed by an operation.* An odorless, thick, glutinous or ropy, opaque, chocolate-colored fluid, containing no deposit when first removed. When boiled it became nearly solid, and coagulated like a thick jelly.

Its reaction was neutral; specific gravity, 1025.

In one thousand grains it contained,—

	Grains.
Water	926·2
Solid matter	73·8
Albumen	54·0
Salts	8·5
Extractive matters	9·0
Fat	2·0

Microscopic examination revealed the ovarian granular cell, granular matter, and oil globules.

It will be noticed that in describing ovarian fluids no mention has been made of the substances sometimes found in the fluids of dermoid cysts of the ovary, such as teeth, hair, bones, various forms of solidified fat, etc. These objects have, however, been already treated of in another part of the volume.

Fluid of fibro-cystic tumors of the uterus.—A description of this fluid sufficiently minute to identify and separate it from other forms of dropsical fluid has never, that I am aware of, been published. Vogel* has, indeed, described a fluid resembling this as constantly found in what he terms fibrinous dropsy; but his description fails to apply to this fluid in several important particulars, two of which may be noticed here. First, he states that the fluid of fibrinous dropsy is more commonly found than that of the serous form, and may be met with in any of the serous cavities; second, that "*some time after its discharge* the whole fluid *generally* coagulates." In both of these points it differs from the fluid under consideration, for this is rarely met with, and only in connection with fibro-cystic tumors of the uterus, and when withdrawn from the body coagulates at once.

That this fluid possesses characteristics sufficiently well marked to merit a separate consideration is shown in the fact that it contains a larger amount of fibrin than is found in any other abdominal dropsical fluid, besides having other peculiarities which will be noticed in describing it.

As it runs from the canula it resembles in its general appearance the fluid of ascites. It is transparent and of a deep amber color when not mixed with blood. If it is examined immediately when drawn from the body, it is quite thin, but *quickly the whole fluid coagulates firmly, and in this differs from all other forms of abdominal dropsical fluid.* This coagulation of the fluid is so thorough that a bottle filled with it may be inverted without spilling a drop. After standing a few hours the coagulum shrinks, and the mass separates into two parts: a coagulum, which may be almost colorless, or yellow, or red, depending on the amount of blood present in the fluid, and a thinner portion, which in appearance resembles the fluid of ascites.

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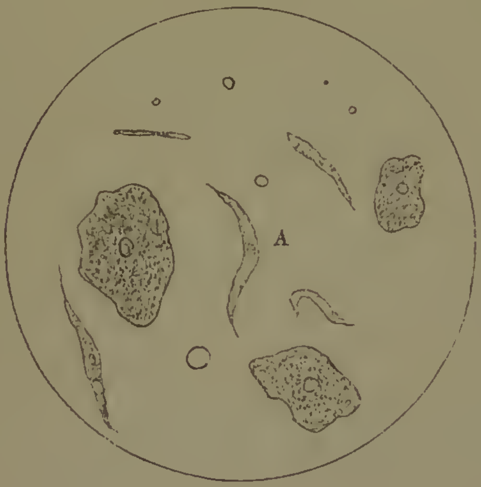
* Pathological Anatomy of the Human Body, by Julius Vogel, p. 53.

Chemical characters.—The chemical composition of this fluid is almost identical with that of the second variety of ascitic fluid, and differs mainly from it in the greater amount of fibrin and albumen which this contains. By comparing it with the fluid portion of the blood deprived of its corpuscles, it will be seen that in both its physical and chemical properties this fluid resembles the liquor sanguinis; that it is the result of direct effusion of this liquid, which has subsequently undergone change, there can be but little doubt.

Microscopic characters.—Although we find but few cells in this fluid, yet it contains one peculiar to it, and which, in view of its diagnostic value, is of great importance,—the fibre cell, which is represented in the drawing. (Fig. 38, A.)

Fig. 38.



This cell owes its origin to the growth from which the fluid is obtained, and is not met with in any other abdominal dropsical fluid. In addition to the fibre cell, epithelial cells, of large size, and oil globules are frequently seen. The following case gave a well-marked specimen of this fluid:

Mrs. E. A. B. (see Case LXXVI., p. 263.) It was a dark straw- or amber-colored fluid, which, although quite thin when drawn, coagulated firmly in a few minutes, so that a bottle which had been filled with it could be held with its mouth down without spilling. After some hours it separated into two parts, a coagulum and a fluid. The fluid portion, when boiled, entirely coagulated.

Its reaction was alkaline: specific gravity, 1020.

One thousand grains contained,—

	Grains.
Water	929·5
Solid matter	70·5
Albumen	52·0
Fibrin	6·1
Salts	9 0
Extractive matters	2 2
Fat	1·0

Microscopic examination.—Floating in a clear liquid were seen a few fibre cells, some large epithelial cells, and oil globules. (Fig. 38.)

Amniotic fluid.—When the amnion is in a healthy condition it contains an albuminous fluid, the liquor amnii. The amount of this varies even in the normal state of the membrane, and may be present to the extent of three or four pounds without being considered morbid,* or properly spoken of as dropsical. But it sometimes accumulates in such enormous quantities as to constitute a true dropsy of the amnion, and may then be considered under the head of dropsical fluids. The chief reason, however, for describing it here is the fact that pregnancy is sometimes mistaken for ovarian and other dropsies, tapping performed, and the fluid submitted to us for an opinion concerning its nature.

The liquor amnii, when not mixed with meconium, blood, or the remains of a dead fœtus, is usually a thin fluid of a pale straw color, turbid, contains flocculi suspended in it, and has some resemblance to whey. It has a well-marked odor, which is peculiar, and has been compared to that of the spermatic fluid. On standing, a deposit occurs. The consistence, color, odor, turbidity, the amount of contained flocculi, and its chemical composition vary considerably in different specimens and in the different periods of pregnancy.

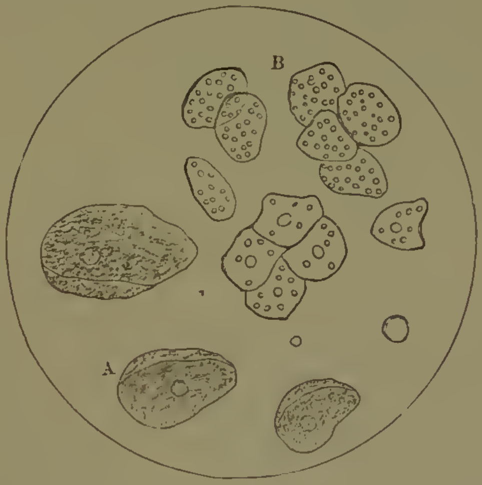
Chemical characters.—Its reaction is alkaline; specific gravity, 1005 to 1010. It contains no fibrin, and a variable amount of albumen. Acetic acid produces a cloudiness, and it becomes opaque when boiled.

---

* Cazeaux's Midwifery, p. 237.

Microscopic characters.—Epithelial cells of large size, which appear wrinkled and creased, are occasionally seen, but more frequently a smaller, tessellated epithelial cell, far gone in fatty degeneration, is present (Fig 39, B), together with oil globules and irregular masses, which are the flocculi. On adding ether, these masses are dissolved and prove to be fat, containing epithelial cells.

Fig. 39.



Case CL.—*May* 11*th*, 1856. See Case LX., p. 213. This fluid was brought to me to examine by Dr. A. L., who had removed it, by tapping, a few days previous, from what he supposed to be an ovarian tumor. It was as thin as water, and cloudy, of a dirty light straw color, contained a deposit of flocculi, and had the odor of decomposition. It became opaque on adding acetic acid and when boiled.

Its reaction was alkaline; specific gravity, 1010.

In one thousand grains it contained,—

	Grains.
Water	988 0
Solid matter	12·0
Albumen	3·0
Salts	5·1
Extractive matters	3·2
Fat	0·5

Microscopic examination.—The large epithelial cells which have been mentioned were present in great abundance; blood corpuscles and oil globules were also seen. (Fig 39, A.)

In thus concluding the description of the principal dropsical fluids of the abdomen, it may be stated that time has not permitted the consideration of others which are occasionally met with, but far more rarely, such as the fluid from hydatid cysts, cysts of the kidneys and liver, retained menstrual fluid, etc.

CHAPTER XXV.

CONCLUDING REMARKS.

The discussion of the subject of the diagnosis of ovarian tumors, both general and differential, will here terminate. Considerable space has been given to it, but the question is of such paramount importance, in reference to ovariotomy, that it is worthy of the fullest consideration. In treating it I have drawn only on my own experience; and, therefore, the subject is not exhausted. But I have written of "that which I do know," and I flatter myself that what I have presented will go far toward enlightening the profession on a question that has been considered obscure.

The difficulties of diagnosis have been universally brought forward as the greatest objection to ovariotomy; and yet, in reviewing the foregoing pages, it will be seen that these difficulties, in the large majority of instances, did not exist so much in the cases themselves, as in the want of care and want of tact manifested by the observer. In abdominal tumors, as in other diseases, the members of our profession are too prone to jump at a conclusion, and hastily pronounce a diagnosis without carefully weighing all the positive and negative testimony bearing upon a case. A want of experience, also, may lead to error, even with the greatest caution of the surgeon: as in all other diseases, so in these, it requires frequent opportunities of observation to make one an *expert* in detecting one form of tumor from another. The novice is not expected to know, and his mistakes in the diagnosis of any disease should not be recorded as any evidence of the difficulty of deciding upon the real character of such affection. Even the oldest practitioner, whose opinions are justly regarded as authority, must necessarily be occasionally at fault, when traveling over strange grounds that he has never cultivated. Diseases must be seen in order to be recognized, and must be compared, and that repeatedly, with congenerous affections, in order to be distinguished. Ovarian tumors form no exception to this truism. Hence no surgeon, old or young, who has had but few opportunities of investigating abdominal tumors, should be too harshly criticised for making a false diagnosis in this class of diseases; nor should a failure, under such circumstances, be regarded as belonging to the difficulties of diagnosis. However obscure a case might seem to the inexperienced, or however deceptive to the careless observer, it would be plain to the expert. It is so in all classes of disease; and hence, as we grow old in the profession, particularly in a large and dense population, specialties necessarily force themselves upon us. The young physician, who usually starts out as a general practitioner, attending to all branches of medicine and surgery, will find that, as he accumulates experience, his success in the treatment of certain diseases will be greater than it is in others, and that his reputation will be in proportion to his success; and, as a consequence, his just fame for the treatment of a certain class of diseases will, in a large city, attract so great a number of patients that, in self-defense, he will have to abandon other branches of his profession, as his time is monopolized by a special class of sufferers. In this way, and without any intention on his part, originates the true and well-educated specialist, having a reputation based upon ample observation and experience. The opinion of such a one is properly deferred to as authoritative by his professional brethren. An estimate of the difficulties of diagnosis can only be made when cases are presented to such professional experts.

I am sure that ovarian tumors can be recognized, and distinguished from other abdominal enlargements, as readily as can the several diseases of the brain, or of the chest, or of the heart, or of the nervous system; and although errors of diagnosis may occasionally occur in the former, they are not more frequent than in the latter affections. Who does not know that, during the exacerbations of remittent fever, the symptoms may sometimes be mistaken for idiopathic inflammation of the brain? or the hydrocephaloid of Marshall Hall be mistaken for typhoid fever, or infantile remittent? or how rarely can we make a positive diagnosis between tubercular and ordinary meningitis? Can we, at all times, make a differential diagnosis between acute softening of the brain and cerebral hemorrhage or tumor? or between paroxysms of hysteria and epilepsy? And how often are abdominal hysteria and hyperæsthesia taken for peritonitis! Such queries might be extended to include the diseases of every organ in the body with similar results, showing that difficulties of diagnosis afford no argument why these diseases should not be treated, and showing, also, that ovarian tumors, upon the same rule, should not be excluded from the resources of the profession.

Even in other surgical diseases there have been very grave errors of diagnosis: encephaloid, aneurism, and hernia have all been mistaken for abscess, and the lancet plunged into them! Tuberculosis of the hip-joint has not unfrequently been confounded with sprains and rheumatism of the ileo-femoral articulations; or with psoas abscess; or with purulent collections in the vicinity of the hip and upper part of the thigh; or with inflammation of the periosteum of the great trochanter! Fracture of the neck of the thigh-bone has been mistaken for dislocation; or has existed without having been detected, even by the most careful examination! Bladders have been cut for stone when no stone was present, and testicles have been removed, in mistake, in cases of hydrocele! Tumors, located over an artery, have been treated for aneurisms! These and other instances show that the diagnosis is at fault in numerous affections not connected with the ovary, and yet surgical interference is not forbidden by the occurrence of such mistakes. These errors, fortunately, are infrequent in the practice of experts, and should be looked upon merely as exceptions establishing a general rule, which rule, also, should properly embrace the operation of ovariotomy.

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